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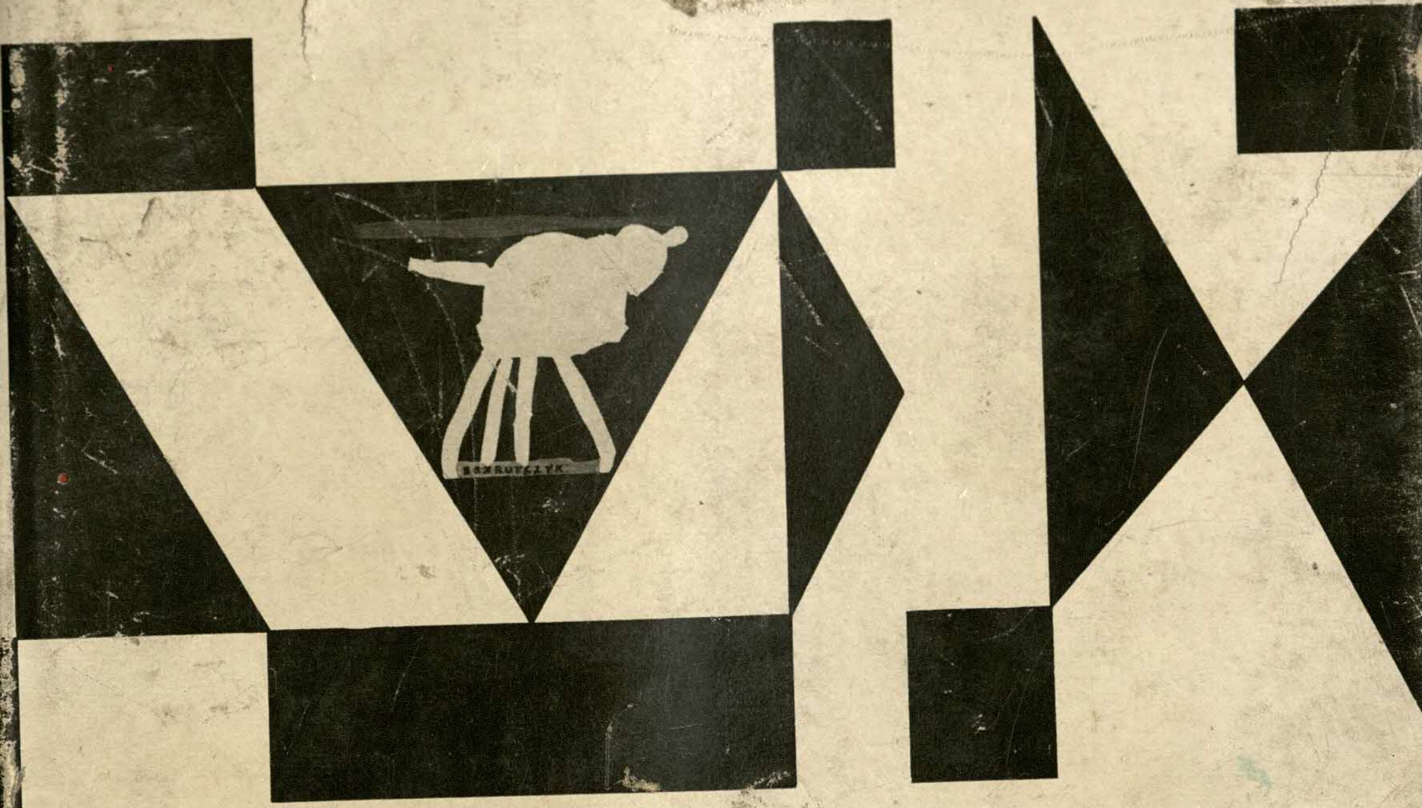

creative teaching in art

VICTOR D'AMICO

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Creative Teaching in Art

By VICTOR D'AMICO

THIS FAMOUS BOOK has succeeded in bridging the gap between the abstract concepts of creative art education and their day-to-day application in the classroom.

Here the fundamentals are made clear and concrete by repeated illustrations of how specific materials and media have been successfully utilized in actual teaching situations.

This Revised Edition brings the book up to date to convey new ideas and developments and to revitalize and reinterpret the basic philosophy on which the book is based.

Chapter Seven, "The Child as Creative Inventor," is entirely new. Replacing "The Child as Theater Artist," it stresses the development of child growth through tactile and space concepts.

Chapter One, "The Child as Artist," retitled "The Child as Creator," now emphasizes that although the child shares the security and creative insight of the artist, he must not be placed in competition with him.

Throughout, scores of new illustrations have been used, and minor changes have been made wherever greater clarification or definition seemed necessary.

As in the original edition, the author examines critically the advantages and disadvantages of the "academic" and "progressive" schools of thought and their programs: the technique-centered program and that which revolves almost entirely about the development of the child's personality. Here the approach is child-centered but provides that full understanding of motivation, processes, and tools without which the child's personality cannot be successfully developed.

A wide range of creative visual arts is included, to satisfy the breadth of interests evinced by changing personalities, and the teaching techniques at every level are geared to the natural growth of the child.

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(Photograph by Len Rosenbe

Watch the child as he works to see the drama of creative growth unfold before your eyes. The expressions of delight or absorption are surer evidence of progress than the finished product. These girls are selecting materials for a collage.

VICTOR D'AMICO

DIRECTOR, DEPARTMENT OF EDUCATION AND
PEOPLES ART CENTER, MUSEUM OF MODERN ART
FORMERLY HEAD, FINE ARTS DEPARTMENT, FIELDSTON SCHOOL, ETHICAL CULTURE SCHOOLS
INSTRUCTOR, FINE ARTS, TEACHERS COLLEGE,
COLUMBIA UNIVERSITY

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Preface

That philosophy is most effective which can be interpreted into active teaching situations. Often profound and even revolutionary ideas are lost or delayed for years in aiding society because they are expressed too generally or too abstractly. Outstanding leadership in education is indeed important, but it remains unrewarded and ineffective until it reaches every school and teacher where it can be transmitted to all children. The object of this book is to interpret the fundamentals of creative education in terms of practical teaching situations. An effort has been made to articulate the ideas as clearly as possible and to illustrate them with actual teaching situations and descriptions of processes and media.

In the traditional approach to education the tendency was to discuss technique or method first and to consider the child second. The individual remained an obscure identity to whom or for whom things were done like a character in a play about whom the story revolves but who never appears on the stage. In the new education the opposite is often true—all the emphasis is put on the child as an individual, but the motivation, processes, and tools for developing individuality remain vague and confused. In fact, it seems that some teachers pride themselves on their confusion and uncertainty.

There is, however, always the great danger that if we criticize one school of thought or philosophy, we are speaking in behalf of the opposite extreme. A criticism of modern methods, for example, may be construed as a return to the old indoctrinary formal procedures. Of course, no such thing is intended here. Creative education has been in progress long enough for us to make a critical and objective analysis of its effect on children.

This book endeavors to clear up some of the vagueness and to articulate the creative method so that the teacher of art may use it with confidence and skill. A wide range of the visual arts is introduced to help the teacher give richness to the child's expression, to meet the extensive demands and to satisfy the broadening interests of varied and rapidly changing personalities. The arts are not thought of or dealt with in any classic or orthodox sense, but as serving to arouse in the individual some desire or need for creative experience, and as an opportunity for its cultivation. The teaching process on the various levels is geared to the natural growth of the child.

An attempt has also been made to coordinate the advantages of the so-called academic and progressive schools of teaching. The skills and discipline of the one, and the self-expression of the other, need to be blended in the creative experience. This is not, however, to recommend a compromise between the two systems, but instead, to suggest an impartial examination of the failures and successes of each with the implication that it may lead to an entirely new approach to education. We do not want either to revive the dictatorial procedures of the past or to perpetuate the irresponsible and laissez-faire methods of many schools today.

No book can be comprehensive in treating all the elements that go into the complex process of creative teaching. This book, at least, makes no such claim. Its main object is to articulate some of the problems and experiences in creative growth so that the teacher may be inspired or encouraged in carrying on the enrichment of creative living for all children, everywhere.

The author expresses his deepest gratitude to the Museum of Modern Art and to the Fieldston School for the use of the artwork shown; to the teachers who guided the work; to the photographers whose photographs bear their names; to Edwin L. Evans, who produced all the photographs bearing no credit lines; to Florence Bezrutczyk for her designs for the jacket, cover, and title page; and to my colleagues and friends for their encouragement and help in so many ways.

VICTOR D'AMICO

Contents

Chapter One

PAGE

THE CHILD AS CREATOR 1

The Child is the True Artist—Sources of Inspiration—Making the Child Conscious of Art Values—The Teacher and the Child—Learning Techniques—Reason for Learning Techniques—The Make-up and Development of the Child as Artist—The Significance of the Other Chapters.

Chapter Two

THE CHILD AS PAINTER 27

The Child as Painter—The Development of the Child as Painter—The Teaching Process—The Problem of Composition—Other Factors of Composition—Subject-Matter Interests—The Child-Artist as Colorist—Teaching Color Theory—Use of Naturalistic Color—Summary.

Chapter Three

THE CHILD AS MURAL PAINTER 51

The Aesthetic and Social Value of Mural Painting—The Individual and the Group Mural—Examples of Mural Projects—Art as Propaganda—Two Processes in the Development of the Group Mural, the Assimilative Process and the Competitive Process—The Collective Mural—The Mural Quality—Mural Processes and their Materials—The True Fresco (Fresco Buono)—Encaustic Painting.

Chapter Four

THE CHILD AS SCULPTOR 83

Children are Naturally Endowed Sculptors—Modeling and Sculpture, a Technical Distinction—The Development of the Child as Sculptor—Modeling; Methods, Subject Matter, Materials—Use and Construction of Armatures—Designing for Sculpture—Sculpture in Relief and in the Round—Carving—Wood Carving in Relief—Wood Carving in the Round—Carving from the Block—Stone Sculpture—Bas-Relief in Stone—Carving in Marble—Summary.

Chapter Five PAGE

THE CHILD AS POTTER 117

Plastic Expression as a Creative Medium—Form Consciousness in the Young Child—Two Tendencies in Plastic Expression, Modeling and Pottery—The Development of the Child as Potter—Pottery as a Medium for Children—Design Grows out of Material—Common Teaching Methods Destroy the Concept of Design—Teaching Design in Pottery Making—Processes of Pottery Construction and their Adaptation to Child Development—Planning the Design—Building Flat-sided Pottery by the Piecing or Sticking Method—Thrown Pottery—Drying and Firing—The Educational Values of the Glazing Experience and Grading Glazing Problems to the Various Age Levels—The Young Craftsman as Ceramic Chemist and Artist—Glazes and Glazing—Different Types of Glazed Pottery—Different Types of Glazes—Ways of Applying Glaze—Firing Glazed Pottery—The Pyrometric Cones—Pottery Decoration—Summary.

Chapter Six

THE CHILD AS GRAPHIC ARTIST 151

The Graphic Arts Present New Media for Learning the Art Values—The Graphic Arts Appeal to Adolescents—Graphic Arts Processes—Graphic Arts as an Educational Vehicle—Teaching Line through the Etching Process—The Etching Process—The Dry-Point Process—The Aquatint Process—The Mezzotint Process—Teaching the Concept of Form Further Through the Lithographic Process—The Lithographic Process—Points to Remember in the Process.

Chapter Seven

THE CHILD AS CREATIVE INVENTOR 185

Collage and Construction—Design Media Suited to the Child's Nature—Collage, Exploration of Materials—Motivation and Direction—Constructions, a Natural Form Medium for the Child—Methods of Working—Advanced Projects in Making Mobiles—Adapting Collages and Constructions to Various Age Levels—Influence of the Bauhaus—Meeting Individual Interests and Needs at Various Age Levels—A Summary of Materials and their Sources—The Test of the Art Experience.

Chapter Eight

PAGE
THE CHILD AS DESIGNER AND CRAFTSMAN 211

The Child is an Innate Builder and Designer—The Sense of Design Seems to Diminish at Adolescence—Common Teaching Practices Inhibit Sense of Design—Order of Learning Design and its Adaptation to Child Development—Design and Manual Expression Both Make up the Craft Experience—A New Concept of Teaching Design—Form Grows out of Materials—The Design Concept—Understanding Design—Design, Realism, and Naturalism—The Use of the Forms of Nature—Geometric and Abstract Form in Design—Visualizing Form through Models—Form and Function in Design—Decoration to Emphasize Form—The Child as Designer and Craftsman—The New Concept at Work—Points in the New Concept of Design and Manual Arts.

Chapter Nine

THE CHILD-ARTIST AND HIS MATERIALS 233

Creative Experience Requires Flexible Materials and Media—Processes and Media Used by Old Masters Revived for Modern Use—Tools, Media, and Processes to Meet the Need of Various Age Levels—The Art of Pigment Making—New Media and Their Preparation.

Chapter One

The Child as Creator

The Child Is the True Artist

In recent years there has been too great a tendency to compare the child and the artist, thus implying that they are alike. Perhaps now more than ever the distinction between the creative child and the professional artist should be clearly drawn. If the child is like the artist, the similarity is in his awareness of design for its own sake and his ability to subordinate subject matter and the story element to the elements of form, line, and color. Another interesting similarity is that the child, like the artist, integrates the elements and responds to them emotionally. But these reactions on the part of the child are usually unconscious. He does not call design by name, but merely responds to it with the enthusiasm with which he reacts to anything that he enjoys or that is dear to him. Unless the distinction has been made for him he does not distinguish between a subject-matter picture and an abstraction. He enjoys both for the elements that they have in common. A young child of four or five seldom asks of an abstraction, "What is it supposed to be?" He is attuned to visual rhythm and he is aware that colors and lines and shapes have their own meaning.

There is, of course, no similarity between the child's powers and the skills and techniques of the professional artist. The work of a trained artist is the result of deep experience, maturity, and a facility that comes from years of rigorous technical discipline.

The art of Paul Klee and that of young children have often been compared, and there are indeed comparable values between them.

Klee has used the spontaneous and direct vision, the imagination and exaggeration, found in children. But as someone has pointed out, the schema in the child's work are personal and relate to simple experiences, while those of Klee are universal symbols revealing the insight of a great maturity and inventive genius. Only the most innocent person would believe that mature artists like Klee or Matisse would want to revert to the conceptual and technical level of a child of five or six years of age. Any assumption that the artist and child are identical in ability and perception tends to demean the virtues of both.

Another danger in art education is the emphasis placed on talented children, with the result that they become highly specialized before specialization is good for them. The tendency toward the genius concept also distorts the aim of art as a valid and necessary experience for all. In any activity there are some who excel—in mathematics, sciences, or sports. To say that the boy who plays baseball well at the age of ten or twelve should specialize would seem ludicrous to most thinking adults, but there are many classroom teachers, principals, and parents who, when they detect a flair for painting or modeling in a child of six, are ready to bundle him off to art school or to have a one-man show of his efforts if they can find a gallery or museum that is susceptible to their idea.

It is high time that educators become informed at least of what to expect of the creative efforts of children at different age levels. The art achievements of children should no longer be viewed with either wonder or indifference. We should by now realize that the creative experience is a necessity for the healthy growth of all children and that art experiences should be so planned that the least able child and the most proficient child find satisfaction in them. This means that activities of varying simplicity and complexity should be arranged to challenge the varying abilities of individuals in the same group.

The art work of children is important to the teacher insofar as it tells him about the child and helps him to keep alive the child's imagination and also the will to express it. Experience, and not the product, is the precious aim of art education. This assertion is true, even though the child at times produces work that startles the professional artist and is prized by his teacher. Whether such cases are due to real artistic insight, or to happy accident, is difficult to determine. Moreover, they are too infrequent and too inconsistent to form a basis for education. It is better to put the emphasis on the child's development, and to consider the product as a gauge of that development, rather than to concern oneself with making professional artists prematurely, or with producing art work of professional merit.

Up to six years of age the child is an instinctive creator. He is prolific and spontaneous in his expression; he requires little encouragement and almost no instruction. He works with abandon and ease, turning out quantities of fresh, exciting pictures. No problem is too great for him to attack (providing it is of his own choice), for he possesses a natural genius for simplification and subordination. He simplifies such problems as drawing people, architecture, and nature, that would baffle the older child, by making symbols. A few strokes will serve to express a man. If he wishes to show a house with action going on inside, he merely removes the side of the house and portrays the scene within. Realism and reason mean nothing to him; he has something to say and he says it in his individual way with amazing ability.

If the freedom of expression and freshness of observation that the child possesses at the age of six could be preserved and built upon as the child grows up, teaching would be a simple matter. But the vision of the six-year-old is not static; it changes and grows with the child. Children who are teeming with ideas at six, tend to become barren at twelve or fourteen. This tendency seems to be true, at least, of American children.

Plate II
Girl 12 Years Old
Museum of Modern Art Classes
(Photograph by Sunami)

If art development were stressed in American schools, our children would probably continue their creative interest through adolescence and continue to grow in artistic prowess to maturity (Plate II).

Sources of Inspiration

It remains a fact, however, that creative power and interest diminish at adolescence. Imagination and expression run low and the teacher often finds himself besieged by children, totally uninspired by the art media before them, asking him what to do. Sometimes the teacher, less prolific than the child, is placed in the desperate position of finding "things to do." In his dilemma he borrows or accepts methods from current practices, art magazines, or methods books, which are designed to help the teacher but which in reality are superficial and petty, and only limit him and reduce art to stereotyped patterns. These methods are well known to most teachers and have become great impediments to creative education. As devices they are ingenious, but have no art value. An example of this want of originality is the popular method of producing designs such as trees, flowers, or geometric patterns by folding and cutting colored papers; or making motifs, borders, and surface decorations by the manipulation of certain prescribed strokes. There is also the wide practice of conventionalizing plant and animal forms by a stereotyped process in which lines are made with lettering pens that cause the art work of schools throughout the country to appear as if it were done by one hand, or turned out in a factory from a single formula. These conventional methods are not only lacking in vision and vital purpose, but are also extremely stultifying, for they dictate the process step by step, and thereby make original and creative work impossible.

Under such influences, the teacher is led away from the child's interest toward a methodical and dogmatized curriculum. The child becomes enslaved to a technique that makes him dependent on tricks

Plate III
Boy 13 Years Old
Museum of Modern Art Classes
(Photograph by Sunami)

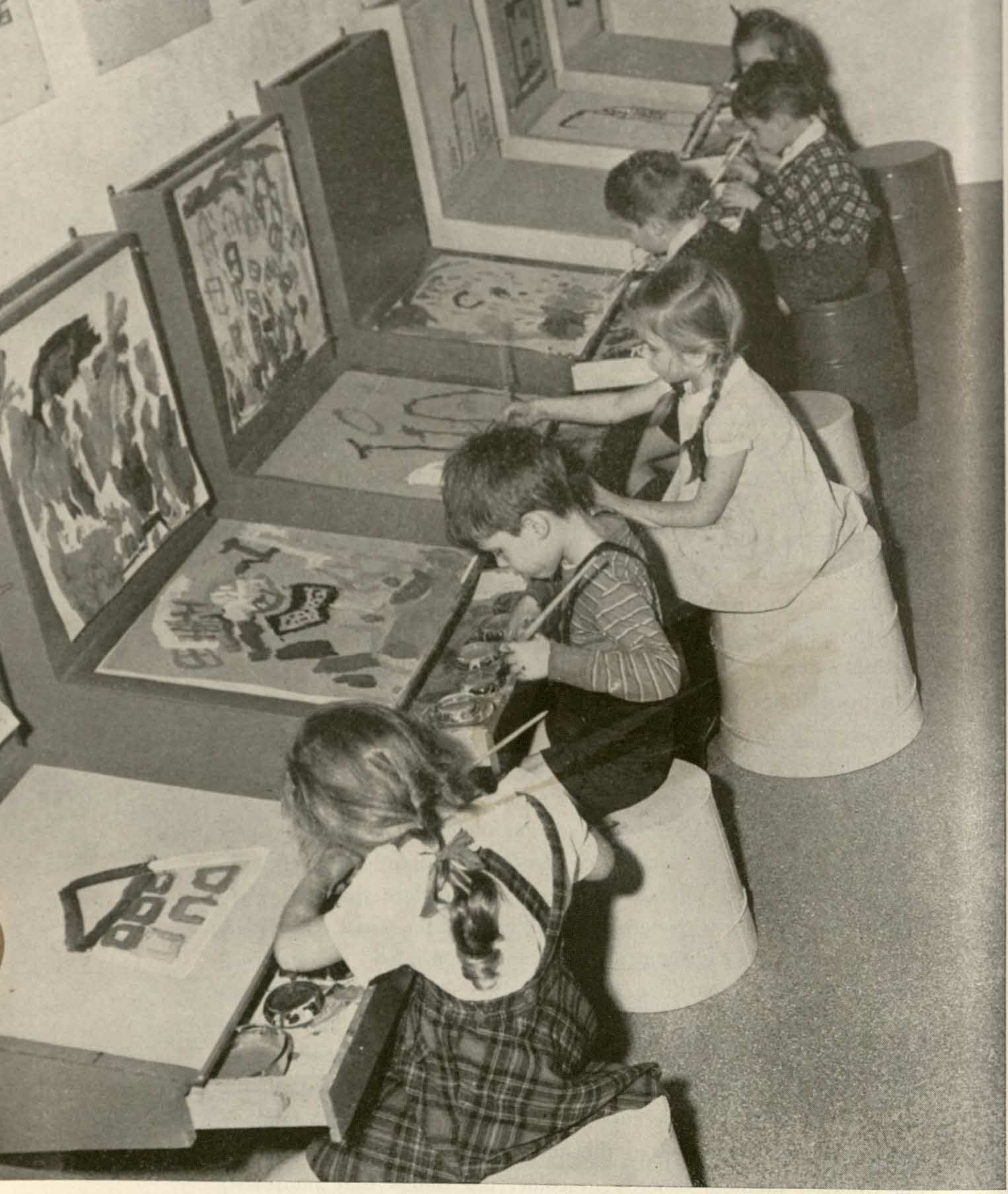
and schemes which deprive him of discovering himself an artist who lives, feels, sees, and reacts to life sensitively and aesthetically.

Our problem would be solved forever if we could only help the child keep his inspiration as Robert Louis Stevenson believed the child might when he said:

The world is so full of a number of things,
I'm sure we should all be as happy as kings.

The world, the very intimate world surrounding each of us, is full of a number of things to draw and paint, only we have become blind to them. We have lost the power to see, and must learn to rediscover the sources within our reach, which will inspire and unblind us. We must look at them with seeing eyes, in the hope of reawakening the dormant native artist within each of us. These sources, the city, the neighborood, the home, and the school, the things one does or thinks about, what one reads, studies, or imagines, are crowded with possibilities (Plate III). Let us discuss each source separately and, as an illustration, relive some of the pleasant experiences the author has enjoyed in helping children to keep their ability to see.

Finding Inspiration in the Child's Environment.—Some time ago the writer and his classes made several sketching trips about New York City in search of ideas. Since all of the children lived in the city, much that it had to offer had become commonplace to them. They had to learn to see with new eyes, the eyes of the artist. Once they rediscovered their environment, they came upon a field rich in possibilities for expression. The group consisted of about three dozen children, seven to nine years of age. Each child's equipment consisted of a large drawing pad, a light-weight drawing board, a tin water pail, camel's-hair brushes, and a color box. They began with their own neighborhood because it seemed wiser to start with familiar experience and work toward the unfamiliar. About twenty-four of the children painted, directly in color, the things that impressed them, and as the pictures flew from their brushes, they ripped them



(Photograph by Michael Caputo)

Plate IV—Children painting a variety of expressions. Easels hang on walls with a display surface on the upright part and a storage space behind. Seats are made of butter tubs. Children's Holiday Carnival, Museum of Modern Art.

off and made a fresh start. As the main object of making pictures was having fun and expressing how one felt, drawing correctly was not of great concern.

On the next trip the group went to the Gansevoort Market, where amid milling crowds of workmen, horses, trucks, and produce, the young artists set to work on the curbing, on packing cases, or on parked wagons, wherever they could find space. With the elevated trains roaring overhead, horses clattering over the cobbles and vendors shouting their wares, the children worked with concentration. Many pictures were the result of that excursion; street scenes, peddlers' carts heaped high with colorful fruit, men loading trucks, the elevated trains grinding around the bend, horses and wagons, tenament houses, and children at play.

An older group of ten- to twelve-year-olds visited Washington Square and found very different scenes. The subjects included the Washington Memorial Arch, ragged children in the wading pool and fountains, and people on park benches or prostrate on the grass. The following day, the group went to the observation tower of the Chanin Building and made sketches of New York. It was thrilling to watch the developing discrimination of these youthful artists as they selected the subject matter of their sketches. One chose as the focus of his picture the Empire State Building, another chose the Chrysler Building, still another centered on a bird's-eye view of Central Park, and another on Welfare Island. With the wisdom of veterans, they avoided all unnecessary details and problems that were beyond them. When they returned to school they decided that the various compositions would make an excellent mural. After the material was assimilated and discussed, a mural was planned with the Empire State Building as the center of interest. When finished, it covered a wall of newly laid plaster, forty feet long and twenty feet high. The project kept the children busy for two months. They also made a mural of the adventure in Washington Square on the wall opposite (See Plate XXIV, page 60).

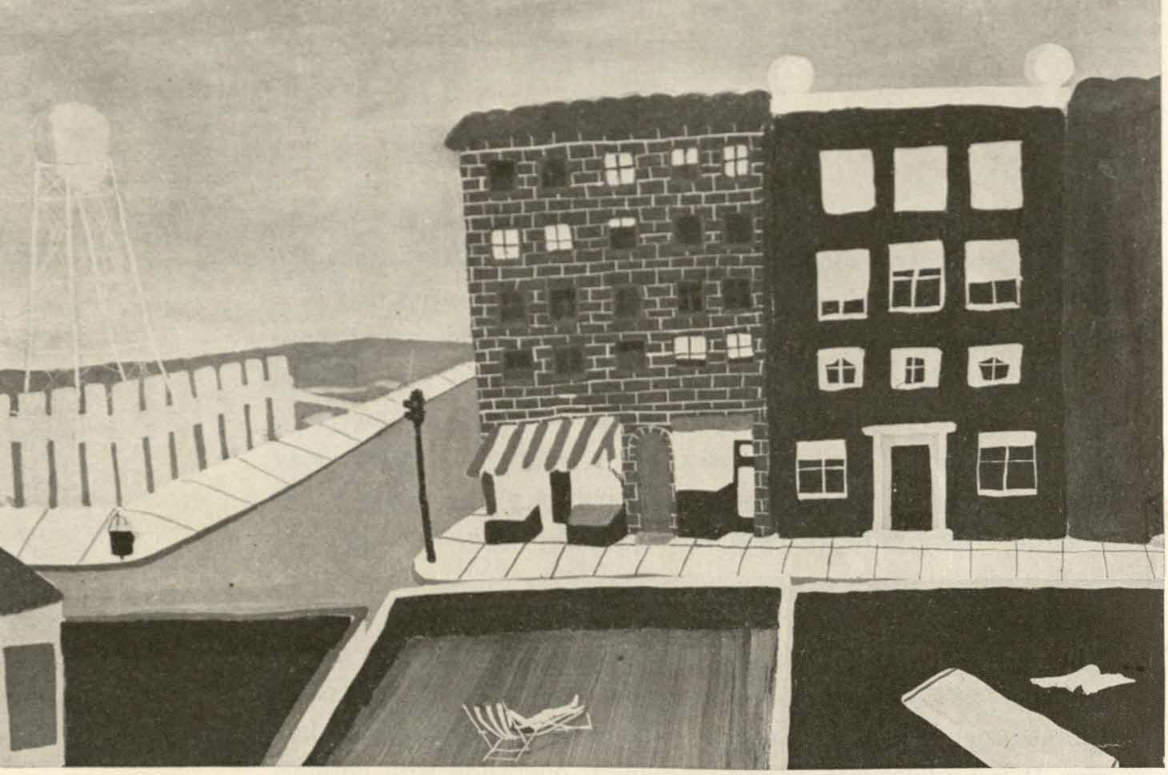
From an East Side settlement house, the writer took a group of young Italian boys to paint the Brooklyn Bridge and the boats in New York Harbor. Their work revealed the unusual sense of draughtsmanship that is common to Italian children. In time they began to see the beauty and wonder of a neighborhood that had always meant depression to them, and devoted the hours formerly spent in playing cards or dice on the stoops, to painting and drawing. This same group later painted the George Washington Bridge while it was under construction. It was a delight to watch their brushes describe the clean curved sweep of the bridge and oppose it with the vertical lines of the piers. One could see as he watched them work that they were beginning to feel composition.

Training the Visual Memory.—It is not necessary to take one's drawing board and tools when looking for interesting subject matter. Children especially, because of their lack of skill, are apt to become literal in their seeing, and to put sheer representation above imagination or creation. The classes often went out on "looking walks" without brush or crayon, just to observe things of interest. On their return, they tried to remember the important things they had seen and to record them on paper. This practice trains the building of imagery in both verbal and graphic expression. At first, when the children started to work, they realized that there was a great deal that they had not noticed and that what they had thought was a good idea had become a poor or uninteresting picture. In producing the picture, this disappointment in the subject matter called for a little invention to make up for careless observation or memory. Of course, each child interpreted his idea differently, depending on the particular way he had seen it. One child used humor; another used pathos; several gave importance to the human element and subject matter; others put the emphasis on design, color, or composition. Thus the child not only developed his power to see, but also used his memory and increased the creative content of his works by introducing invention and originality.

Training to See.—It is said that Professor Cizek, the famous Viennese art teacher, asked his students to draw the pictures they had seen on their way to school. At first most of them vowed that they had seen nothing worthy of a picture, but a little prodding and cross-examination produced a few hazily remembered pictures. The children could not remember what they saw, because they did not know how to look for pictures. Cizek told them how to see pictures in every-day experiences. At first the children noticed only a picture or two, but after a time they came to class teeming with ideas, for they had learned to see.

The art of seeing, however, needs analysis. One must see not with the outer, but with the inner eye. Productions made from seeing with the outer eye only are sheer imitations. A little draughtsmanship is all that is needed for such productions, for the person copies what he sees. It is a photographic and mechanical operation with nothing of self in the experience. Seeing with the inner eye requires discrimination, putting down only those qualities that the artist feels are significant to the expression of a subject, mood, or idea. This method sometimes requires putting down things which are not actually present, but which the artist feels are important to the expression of the idea. He may add a line to a composition, change a color, emphasize a portion of a picture through size or value, or carefully omit details which, though interesting in themselves, detract from the main purpose of the picture. The inner eye, therefore, sees with meaning and purpose, the outer eye sees only things as they are.

The Home and Self Provide a Rich Source of Inspiration.—There is probably no richer and more intimate source of inspiration than the ordinary things we and our families do. If we had the insight and genius that Peggy Bacon has in seeing herself, her friends, and her family, we would always be supplied with ideas. The week-end experiences of an average boy are full of possibilities; fishing, attending the movies, hiking with friends, using the workshop, taking care of pets, and the like.

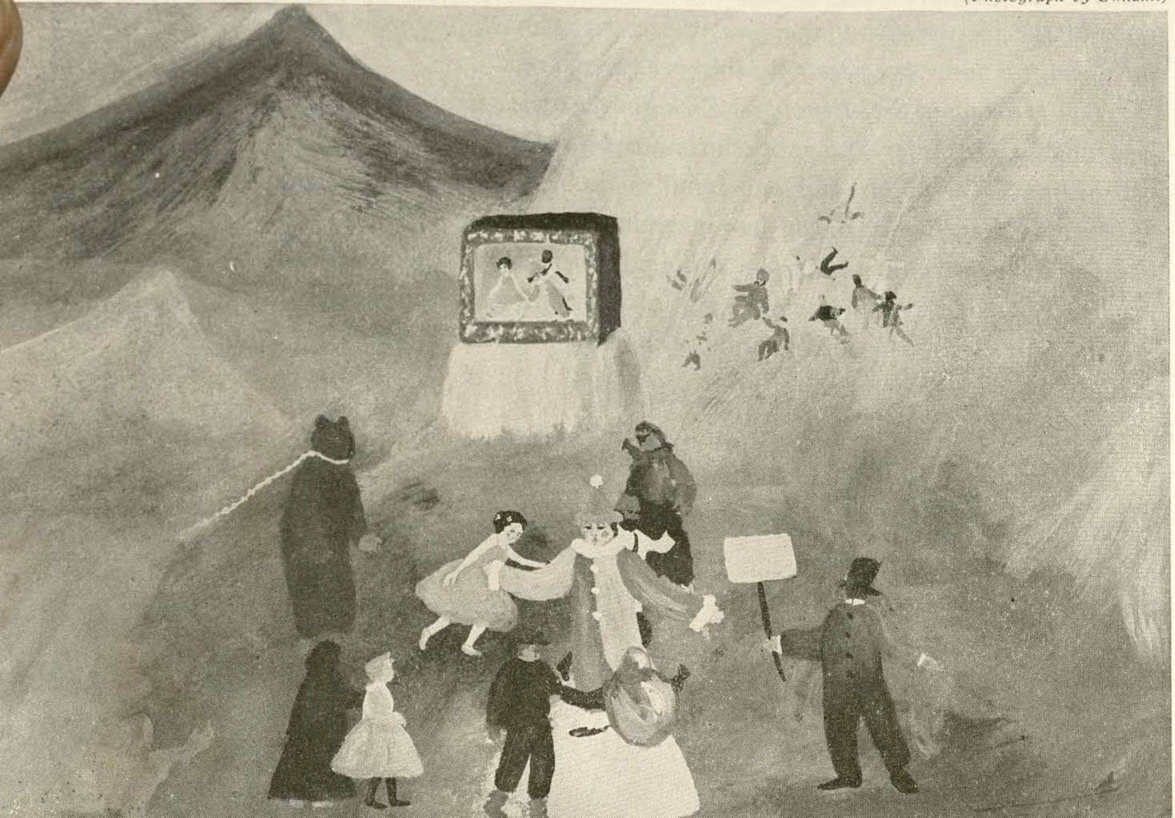


(Photograph by Sunami)

Plate V—Girl 16 Years Old. Museum of Modern Art Classes.

Plate VI—Girl 17½ Years Old. Museum of Modern Art Classes.

(Photograph by Sunami)



Family activities offer a great variety of subject matter for compositions. Any evening at home should provide subjects for pictures; father and his evening paper, his dress, his posture, characteristic gestures or lines of his face and body; mother at work, knitting or sewing; sister reclining on the divan, buried in cushions and enthralled in a novel: commonplace situations and occurrences, but uncommon opportunities for the artist.

It is an interesting experiment to ask a child to take a subject and attempt a composition, then to go to the direct source and compare how much he has overlooked. The importance of this experience lies not in the story element, or the subject, but in the arrangement of the matter for composition, the design of the background, the use of significant and important detail, the emphasis or exaggeration of the interesting elements, and the subordination of the uninteresting ones. For example, a child may take an ordinary scene with which he is well acquainted, such as a street corner in his neighborhood (Plate V). After he has made a sketch from memory, let him go back to compare his impression with the truth. Ask him to look for the characteristic qualities of the place. What particular activity or objects make that street corner interesting to him? Do the lamp post, water hydrant, and ash can give it character? Does each have its own character? What about their relation to each other? What does he want to say about that particular corner and how will he make his statement clear through the elements of lines, colors, and forms which are his media of expression?

While a sense of humor and satire helps the composition, it is not necessary for the artist to use it unless he feels that the situation calls for it. It is important, however, for the artist to acquire an impersonal attitude toward these intimate subjects, to see them as if he were seeing them for the first time, for it will help him to attack his work with unjaded vision and to become more sensitive to seeing with the inner eye.

Unusual and Exciting Events as a Source for the Young Artist. We have considered the wealth of opportunities in the commonplace world about us—our experiences in the home, neighborhood, and city. Let us now focus our awakened vision upon the less usual and more colorful, upon the events that linger in our memory, the outstanding ones in the year's experience—the circus, the amusement park, the parade, the May Day festival, and the country fair. These recollections cannot fail to stimulate even the most unimaginative observer. Let us take the circus with its animals, clowns, and acrobats, its dancers and barkers and trapeze artists. It provides not only good subject matter, but also excellent possibilities in design. Imagine the delight of the sensitive designer when observing the huge curves of the big tents, the angular lines of the trapeze in action against the dominating perpendiculars of the tent poles, the color and contrasts of costumes, and the exciting contours of the horses as they prance around the ring. The idea is almost irresistible to the artist mind. We could make the same analysis of the other fascinating places; the amusement park, the beach, or the country fair, but we shall leave this pleasure to the fertile imagination of the reader. No matter how rich the verbal picture we may draw, it cannot equal the potentialities of a graphic expression of the same subject (Plate VI).

The variety of results that any group of children produces after a common experience is amazing. Some will make close-ups of simple events, while others will show large complex compositions of whole scenes. Each child's experience is expressed individually and is colored with his imagination.

Seasonal Events and Special Holidays.—Seasonal events, especially sports, never fail to intrigue the child artist. Football and baseball or others of the wide variety of summer and winter sports are rich in materials for boys and girls. These subjects employ memory or direct observation.

Holidays present both possibilities and problems as subjects. Hallowe'en, Thanksgiving, Christmas, and New Year, though rich in imagery, offer problems because it is difficult to get even the child's mind away from the hackneyed and sentimental pictures made popular through commercial greeting cards, advertisements, and textbooks. However, the original artist can be spared commonplace results by interpreting the meaning of these holidays through his own experience of them. For example, such experiences as a visit to the country in mid-winter or the Christmas party or dinner at home should offer more valuable material, and have much more significance for both the artist and his friends, than the formal Christmas Tree design, or the picturesque nondescript farmhouse with the trail of smoke curling from the chimney!

The custom of giving gifts connected with certain holidays, Christmas and Easter especially, is usually sufficient incentive to awaken in the child the desire to make gifts. At this age giving self-made gifts, such as carved boxes, pottery, jewelry, or metal objects, is a great pleasure to him. Here is an opportunity for the teacher to develop the various crafts and arts and to foster the spirit of unselfishness. Designing and working out such objects are equally as important as making pictures, and are subject to the same stereotypes and sentimentalities, but the way to avoid these undesirable effects will be discussed in another chapter.

The Unseen World as a Source of Inspiration.—The great unseen world of events and scenes in stories, in poetry, in history, and in geography, experienced by the child through his various school subjects, should be utilized (Plates VII and VIII). This world is only observable through the mind's eye. It offers both individual and group activity. The illustrations in the stories read by a class, or the graphic representations of a people or a country studied by a group, might be the starting point of an art experience for the whole class. Such materials not only provide subjects for the arts, but also can help to integrate art and other studies. By reconstructing in concrete expression the background, people, and customs of the period they are studying, the children are learning history as well as experiencing

(Photograph by Sunami)

Plate VII—Boy 11 Years Old. Museum of Modern Art Classes.

art. Stevenson's *Treasure Island* was rendered entirely in pictures by one junior high school class, showing a sensitive use of design and a keen understanding of the story.

When using material based on story and history, the tendency of the child is to be influenced by the professional illustrations that appear in his books to the extent of imitating or copying them. It should be made clear to the children that they are artists in their own right and that anything they do, in spite of its crudity or inaccuracy, is more precious than any amount of imitation, for originality and invention are the highest attributes of a work of art. This point of view should, of course, be held by the teacher, who is too prone to admire draughtmanship and professional finish in children's work to the prejudice of creative ability.

The stories, songs, and poems that a child makes up can serve as a further source of inspiration if he is encouraged to illustrate them.

Making the Child Conscious of Art Values

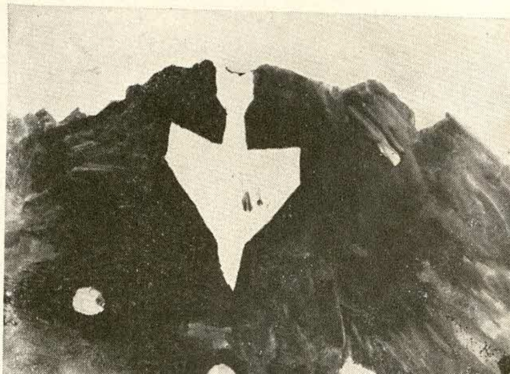
The teacher often asks when and how to make the child-artist conscious of design. The teacher should always emphasize art values as an integral part of the creative process; and line, form, and color as the means by which imagination and visual concepts are to be converted into aesthetic expression. Difficulty arises when these factors are isolated from the creative act and thrust upon the child as crystallized rules or formulas. This constraint is indeed *making* the child conscious of design.

But sensitivity to art values cannot be produced by compulsion or regulated by laws. Unfortunately much of the art education in the United States is the result of such a process of teaching. Children are taught definite rules of art, and are given set problems which are supposed to insure their understanding of the values underlying the rules. For example, a large majority of schools spend the precious time allotted to art in making plates which illustrate color harmonies, rules of balance, rhythm, or unity, and the like. The result is a quantity of stereotyped work which has no significance as art or child expression. The child has merely learned a formula which he fulfills without enthusiasm, emotion, or imagination. Not only is little or nothing gained by this experience, but the child's imagination becomes atrophied by lack of use.

It is recognized that these methods have been practiced by teachers with the best intentions who hoped to make the child conscious of art values by bringing him directly in contact with fundamental laws governing art. Fortunately, the learning process is not so simple. Sensitiveness to design cannot be acquired by memorizing and rationalizing a few laws, but must come by a continuous process of active participation and realization of creative experience.

The creative teacher does not expect too much of the child at first. His primary aim is to keep the child free in expressing his own

Plate VIII
Boy 12 Years Old
Museum of Modern Art Classes
(Photograph by Sunami)



feelings, ideas, and impressions through the various means and avenues just described. If the child is facile and enjoys expressing himself, the teacher can help him to become aware of certain problems of design that appear in his creative work. From this state of awareness, the child can be led to work consciously with these values; and ultimately, after continuous and extensive experience, he may come to master them.

Such development will begin with a subconscious use of them. In other words, the young child uses line, form, and color intuitively and emotionally, while the adolescent thinks of these factors as means of producing an idea in visual form, or the older student may also apply them in problems in abstract design.

The Teacher and the Child

The relation of the teacher and the child is the most important factor in education and should be carefully considered. The teacher can assist the child in many ways; for example, in selecting materials suited to his ability, choosing tools that are neither too large nor too small for the age, in clarifying his ideas through discussing the problem with him, or in selecting a simple subject from a confusing situation. The latter help is usually needed when children begin to work from nature. Occasionally a teacher will find it necessary to start a group off by beginning a painting for demonstration purposes, but when his point has been made, the work should be immediately removed from sight, for children are imitators and will readily copy the teacher's work. Working directly on the child's picture should be strictly avoided by the teacher. If it is necessary to draw for a child, the teacher should make a sketch on his own pad and destroy or remove it after the problem has been cleared up. The ideal approach gives the child the self-confidence and courage he needs to work for himself without these external aids.

It is important not only to permit the child absolute freedom, but also to see that he develops. Each experience should be a new adventure and a step in advance of the preceding one. A child who tends to repeat a type of expression that he has found successful can be led out of his safe but static position by a change of subject or medium. In his eagerness to allow the children to be entirely free of his influence, the teacher will often allow them to make starts which are bound to be unprofitable or to continue in a wrong direction. While many learn through failures, failure at the beginning of an experience often leads to discouragement and may inhibit the originative expression. The wise teacher will start the child in the right way, the way that provides the most satisfaction. For example, if a child undertakes a project that is beyond him, or attempts to do a picture in a medium that because of its size or specific nature should be rendered in another, or begins his composition too large or too small for his paper, he is bound to face disappointment after his work gets under way. The experienced teacher anticipates such hazards and meets them with the kind of help needed where and when he thinks it will do the most good. Good teaching, in the long run, depends upon good judgment.

Learning Techniques

Earlier in this chapter it was stated that the young child has an innate power of simplifying problems and that his lack of skill is no obstacle to his progress. As he develops, however, he becomes conscious of his inability to represent forms as he feels he needs to, and before long the teacher is besieged with a battery of questions on technique. This tendency is especially acute at adolescence, when the individual becomes conscious of realism and good draughtsmanship. The teacher who desires to have the child remain free and spontaneous may fear that any emphasis on technique will distort the inspiration or form indelible patterns. The teacher's fears are well founded, and special care must be taken with the development of the individual at the adolescent stage, but the problem cannot be ignored or circumvented. Here is really the ideal opportunity to teach the individual what he needs to know, and the teaching, the directions given, the demonstration—whatever form the teaching takes—should be related to the needs and problems in the art experience at hand. For example, a boy may encounter a problem when drawing a chair or table in his picture. This difficulty presents the opportunity for him to learn about perspective. The instructor's problem is to teach him as much as his needs and interests demand, and not to confuse him with too much teaching, else the original purpose of the problem will be lost. The child or adolescent will assimilate only what he can consciously understand and use. For example, in the case of the boy who wished to learn how to draw a chair correctly, if the teacher overweighs the span of interest by submitting him to an overdose of perspective because he feels that he should know all of it, he will discover that the boy may lose not only his enthusiasm for the problem, but mechanize his work as well.

Teaching in response to need, and through understanding, requires an individual approach, for every child in a group will not meet the same problem at the same time, because each child develops at his own rate of speed. The teacher may find himself confronted with handling several problems at once and discover that the class presents a very irregular progression of learning. This circumstance may increase his tasks and upset the orderly procedure of his program, but any preconceived order should be sacrificed for the good of each individual child. It should be expected that the teacher who is devoted to a methodical program and is imbued with preconceived notions of what a child ought to know will have difficulty in endorsing or employing the foregoing approach.

Individual teaching does not imply that group teaching through common interests and subject matter is neither natural nor desirable. There are many occasions when an entire class will be interested in the same subject or problem. For instance, it is common for students at the high school level to wish to know how to draw the human figure (Plate IX). When this need arises the teacher may well give the class experience in working from the figure until their immediate interest in mastering the figure has been satisfied. Because adolescents on the whole are interested in the human figure, the teacher will find it desirable to introduce life drawing as a group project.

Examples of situations in which individual and group methods are used may be helpful. Several students in the class may encounter different problems. Let us say that one boy desires to learn to draw a chair correctly, another finds difficulty in depicting the figure, a third becomes concerned with a color problem, while a fourth encounters a problem of form or value. It is evident that each problem will have to be analyzed separately if the needs of the respective students are met, and that calling the attention of the other three students to the problem which does not affect them, will interrupt their cycle of interest and development. Moreover, it should be remembered that the learning the student receives against his will is sure to be superficial and ineffective. Also, in taking advantage of the child's interest, we take advantage of his readiness to assimilate what he learns and experiences, which in turn makes our teaching more indelible.

When we dogmatize teaching, we use only one channel of access to the child, the intellectual approach. In this case the emotional and creative powers remain in abeyance or in conflict with our purpose.

The group approach is effective when the interests of the children of any specific age level are general, or when their problems are created through some common experience. For example, young children are generally interested in animals. A trip to the zoo or the aquarium may arouse the desire of a whole class to draw animals and fish.

It is important to emphasize, therefore, that the teaching of technique should be based on child values and development rather than regimented by a rationalized curriculum. Although the individual method is being employed, it is often possible for the teacher to call the

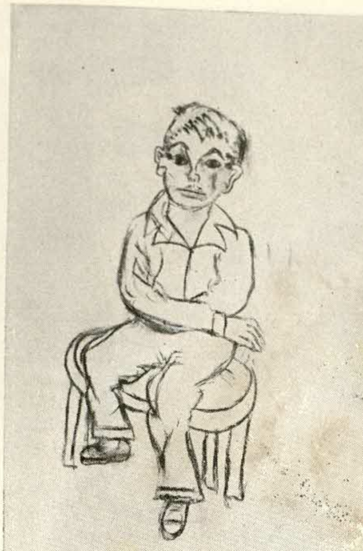


Plate IX
Boy 15 Years Old
Museum of Modern Art Classes
(Photograph by Sunami)

attention of the group to a problem met by an individual child, and thus allow the entire class to profit from his problem and its solution. Those who are not interested or are engaged in a deeper problem of their own, should not be coerced into giving attention to the individual's problem. The individual approach also allows for more varied experience for all, since each child is exposed to the learning of all his classmates.

Reason for Learning Techniques

It was stated earlier that teaching a technique should meet a definite need or problem encountered by the child in his original work, and that he should return to this work as soon as he has gained insight or the necessary power. In summary then, a technique is not taught as an isolated activity, or as an end in itself, but as a means of helping the child to express himself.

Our next concern is to discover the source materials which shall best develop the necessary technique. The first and best source is life itself. Whenever it is possible, the child should work with the natural object and in the environment he wishes to know. That is, if he needs to know about the human figure (Plate X), he should work from the living model; if he desires to know the shapes of trees or clouds, he should go directly to nature.

A famous Mexican art teacher employs a clever method in teaching drawing. He has two studios for his students; one is used by the students when creating their original compositions; the other is used by them when learning to draw. The latter is equipped with life models, still life objects, and various other materials. When a student encounters a problem that he cannot readily solve in drawing in his composition, he is sent into the drawing studio to master it. As soon as he has satisfied himself and his instructor he returns to his original composition.

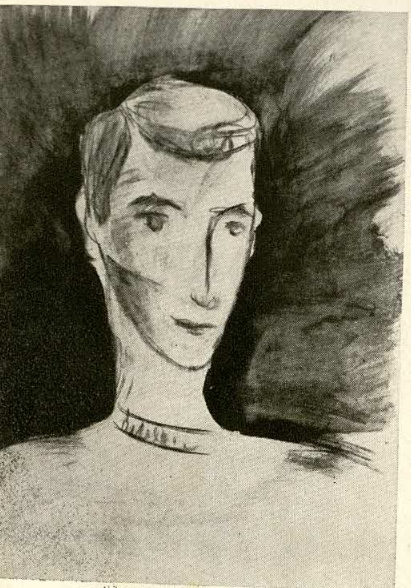


Plate X
Girl 12 Years Old
Museum of Modern Art Classes
(Photograph by Sunami)

A secondary source of materials is found in good representative objects. The student may depend on good photographs that give the necessary information for his work. Many schools are developing drawing through the use of the slow motion camera. Children draw animals or human figures as they are projected on the screen in motion. The movement is slow enough to register a complete impression on the child. This use of the film is an excellent means of teaching, for it gives the child both the knowledge through seeing, and the skill through doing. Since the child has not sufficient time to copy the object, he is compelled to select only the most significant lines. Visual aids of this kind should be at the disposal of all schools and art teachers.[1]

The third source of materials is the original work of artists. Animal paintings and drawings of prehistoric man are excellent material to demonstrate to the child-artist of all ages both precision of rendering and economy of detail. Japanese and Chinese brush work of flowers, plants, and animals is an excellent source for teaching spontaneous workmanship, and serves as an excellent example of the result of precise and significant seeing. Using this work often provides a good opportunity for beginning free brush work with children. In plastic expression, especially of animals forms, the sculpture and modeling of primitive peoples, such as the Aztec and the African, present a wide field for stimulating original effort and widening the experience in appreciation. To these examples we must add the works of our modern artists. The animal sculpture of John B. Flannagan for instance, because of its simplicity and honesty, is especially suited to children. We must not omit the vast field of medieval sculpture which offers unlimited possibilities to the artist who wishes to inject imagination or humor into his subject matter. In studying the figure, works of the past and of modern masters can be used extensively, for both suit the needs of children of various levels.

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[1] The author's school worked out films for its own use. They are no longer produced for distribution.

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For example, the famous portrait studies in line of Holbein and the exquisite engravings of Dürer, present excellent means for stimulating the child-artist to see and execute significantly. The contour drawings by Picasso, the dynamic renderings of Rivera and Orozco, the powerful line of van Gogh, and the sensitive drawings characteristic of Daumier add extensively to the materials of figure study.

Patent methods of drawing the human figure or other forms, as those advocated by many popular drawing books on the market, result in stereotyped methods and devices and should be avoided. Also the works of artists which are so definite in character as to be stylized, influence the child to imitate or to copy, and therefore should not be used. Such works will destroy the incentive to see and to express one's self; ends which the teacher is trying to foster. Examples of such character may be found in both good and bad art. Accurate diagrams or drawings, such as the stereotyped illustrations found in the encyclopedias or dictionaries, are only useful to the artist as sources of information.

The Make-up and Development of the Creative Child

This chapter began with the statement that the child is by nature a creative being endowed with imagination and the power to express himself in visual terms. Later we indicated that the child changes from the courageous state of the primitive designer to the conscious state of realist and draughtsman. At various other points in the discussion we have indicated changes that come as the child grows up. It may be well to analyze briefly this development in terms of child behavior since the following chapters are based on the development of the child.

During the pre-school and kindergarten years the child is an experimenter and individualist in art. He actually plays with his materials to please himself. He is not concerned with what others think of his work and seldom consults them. He starts with genuine inspiration and zeal and continues until they are expired. Once he is done, regardless of whether his picture is finished or not, it is futile and unwise to urge him further. His growth comes from satisfying his emotional impulses as they are aroused in him. We often call him an abstract artist because he works mainly with lines and masses without any tendency or intent to represent forms as they appear to the photographic eye.

From the first to the third grade, the child represents objects and people, not with accuracy or detail, but with self-devised symbols.

After the third or fourth grade, the child begins to express ideas through art and to use his art as a form of communication. He is both conscious of and concerned with what other people think about his work, and seeks encouragement and help from his teacher and classmates, especially from the capable ones. His art expression changes from broad, direct concepts to those requiring attention to detail. Since a change of medium and materials is necessary for some children, the teacher must be aware of this need. Often a child loses his interest in art because he cannot make his materials yield to his expression. The subject matter seems to be general and includes every form of expression, but is mainly related to varied human activities and interests.

The period from the sixth through the ninth grades is busy and eventful for both child and teacher. As the child acquires his sense of realism and draughtsmanship the teacher finds himself besieged with all types of questions concerning techniques. The child becomes very self-critical and will not accept careless or approximate thinking. Boys like to make intricate and involved drawings of machinery or inventions, revealing an amazing amount of information on these subjects, and are especially intrigued by new processes and media. Both boys and girls are interested in learning to master the drawing of the human figure (Plate XI). The teacher must be careful and ingenious to keep the imaginative and originative faculties alive in the face of the student's interest in skills, techniques, and desire for information.

The teacher should strive to keep a constant balance between the two tendencies. This task is not difficult if the proper subject matter is employed. This age level, when the child is interested in many media and expressions, is spoken of as the exploratory years.

The various kinds of art experiences discussed in the following chapters should prove a fertile source to the teacher. An extensive, as well as an intensive, experience in the arts will be found expedient, as a variety of interests demands a variety of expressions and media. The plastic arts are especially popular with boys and girls of this age because they are an outlet for their abundant energy and the desire for many kinds of manipulation. The interests of this age level in skills will augment the necessity for many processes and the mastery of many kinds of tools. During this period the child is not only eager for a wide range of experience, or for work that will release pent-up energy, but is also trying to find the expression that is most suited to his ability. These are rapidly changing years, when sex and individual differences are quite apparent. Therefore, the studio that offers many materials for children to work with and many channels of expression, and that is under the individual attention of a skilled artist-teacher, will be found much more successful than the classroom with a fixed and limited program under the direction of a teacher with a single viewpoint.

The grades between nine and twelve are the best years for training the pupil in the power to create. The pupil entering the adult stage is usually very serious and eager to learn all that he can about art. He shows an amazing ability to concentrate and to acquire the attitude of the artist. The teacher has a greater influence over him now than at any other time, and the pupil's success depends largely on the wisdom and teaching ability of the instructor. It is therefore important that the teacher himself be a creative artist, because if he has any formal or stylized methods, the child is sure to copy them. The teacher must be careful to keep any of his own ways of working or thinking away from the

Plate XI
Girl 16 Years Old
Museum of Modern Art Classes
(Photograph by Sunami)

pupil, and to allow the child to follow his particular method or feeling. The pupil's interest in professional attitudes and achievement lays him open to tricks of the trade and professional styles which the teacher, in the best interests of his pupils, should discourage. The pupil will also have a tendency to specialize too narrowly in a particular branch of art, such as costume designing, illustration, or lettering, instead of first acquiring the broad concept and power of art expression. The pupil, in his eagerness to achieve, is often his own greatest enemy; and therefore the teacher must act as guide in stabilizing him during these years.

The child is the true artist in his ability to enjoy and use aesthetic experience. Through the creative process he learns to use his native powers, to get more out of himself, and to acquire insight into life. In these ways he shares experiences in common with the artist, for like the artist he is a sensitive and responsive person. As we said in the beginning of the chapter, it is not intended to imply that all children can become accomplished artists, or that the aim of art education is to develop such artists. It is intended to imply, however, that the business of art education is to help to develop the artistic capacity of each child through creative experience. For this purpose the school should offer as wide a variety of activities in art as is possible, so that each child may find his particular type of expression and have as many experiences as he needs or desires.

The Significance of the Other Chapters

The following chapters are planned to meet the varying needs and capacities of individuals at different age levels. Their contents cover the fields of art in which the children are interested. It has been the author's purpose to show the creative development of the child from the pre-school age through the secondary school in relation to the particular art discussed in each chapter. In all instances methods have been recommended to fulfill particular child needs or interests at particular age levels.

In other words, it should be recognized that separation of these different activities into chapters has been made only for convenience of discussion and analysis, but that no such separation actually exists in the child's make-up and, therefore, there should be no separation of these activities in the creative experience.

A child does not begin as painter and then continue as sculptor, and so on. He may develop two or three fields of art endeavor simultaneously, or pass from one to another, or adhere to one throughout. Certain general tendencies will, however, be discovered at particular levels. For example, young children will enjoy both painting and plastic art, the adolescent may have a greater affinity for plastic expression than painting, and the student in the upper levels will tend more toward specialized and individual interests. These tendencies may be expected, though they must not be taken for granted, because exceptions are numerous. The wise teacher will not begin an activity with preconceived notions, but will let the children lead the way. It is important, however, to note when the child adopts a new expression so that the teacher may begin with him at his proper level. A child of four and one of fourteen beginning sculpture or pottery require different approaches.

The sum total of the ensuing chapters should give the teacher a complete idea of the complex make-up of the creative nature of the child, and help him to adjust a particular activity to a particular need. Most of the methods suggested are those used by the professional artist, but the processes have been simplified in many instances to meet the limitations of the beginner or the young child.

Chapter Two

The Child as Painter

The Child as Painter

Painting is a natural expression of childhood, and one of the best media for stimulating creative response. Its fluid movement and ease of control make it pleasing to most children. It encourages spontaneity and originality in the most stubborn and inhibited nature. With the proper attention and direction, the tense, the academic, and the timid can be reborn through painting into a world of freedom and satisfaction. Both the spontaneity expected of the beginner, and the deliberate concentration required of the gifted artist, may be attained through this medium.

Painting is a general and persistent art with children, and one to which the majority of them return, even though they become interested in other activities. It ranges from a play expression on the lower levels, to a fine and specialized art on the upper levels. By its natural appeal to the creative sense, it evokes amazing results from the very young child (Plate XII), and by the same appeal to the conscious mind of the older student, it causes him to produce works of aesthetic merit and satisfaction. Therefore, painting as an expression of art changes at different age levels because children of various ages employ and respond to it differently. For example, the young child uses it as a medium of release or play, while the older child, like the adult, regards it as a specialized activity. The young child employs the aesthetic values intuitively, and the older child uses them consciously.

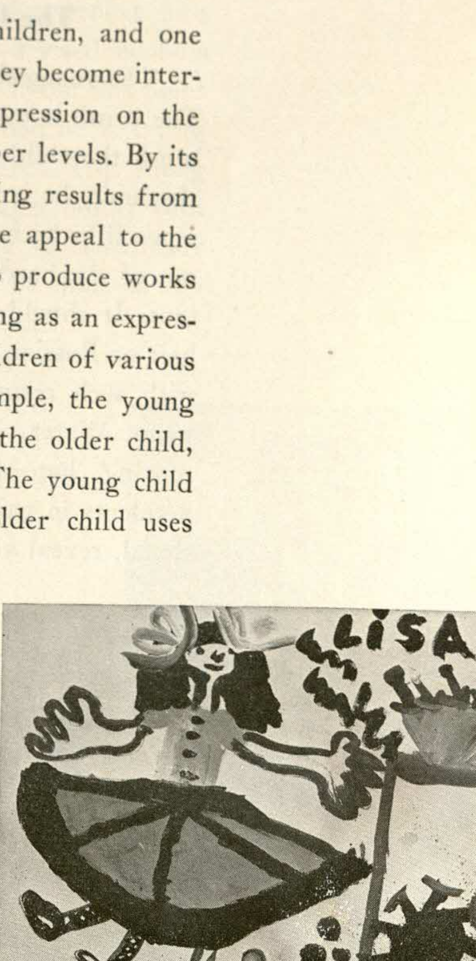


Plate XII

Girl 7 Years Old
Museum of Modern Art Classes
(Photograph by Sunami)

Media and materials should be different for the demands and purposes of the various ages. For example, while oil paints are an excellent medium for the frequent changes and working-over necessary for advanced students, they are too complex for the spontaneous and free approach of young children. The subject matter of painting also goes through a peculiar cycle of change. At first there are the abstract dynamic patterns and splashes of color used by the child of the pre-school or primary grades. From these develops a use of symbols, representing objects or things (Plate XIII), in the early elementary grades, which changes into realistic and naturalistic expression at adolescence. However, there is often a return in late adolescence to a conscious use of abstraction and of design for itself.

While we shall consider painting as a fine art, our greatest concern with it will be as a general creative expression. We shall, therefore, lay greater emphasis on the effect it has upon the child, than on the standard of work he attains. One may assume, however, that if the teaching is good the work will be good.

The Development of the Child as Painter

The young child from four to six years of age is a "born painter." The brush is more natural to him than the pencil. In his use of the brush the child is relaxed and free; his movements are poised and rhythmic, he is drawing with his arm and body. When a child uses a pencil he becomes tense, and obviously labors to squeeze a free idea out of the hard point. Therefore, the choice of the brush is important. It should be a resilient, flexible, responsive brush of camel's hair or Russian sable. It should be large and full, and should be used with such responsive pigment as water color, tempera, or poster paint. Water color is a good medium, not only because it is free-moving, but also because its running element allows for happy accidents in painting quality or color-mixing which, though unintentional, reveal new possibilities to the child and fill him with the curi-

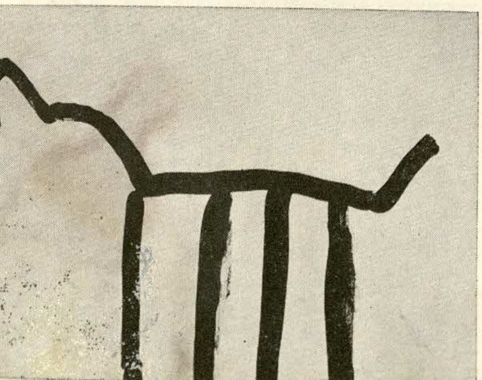


Plate XIII

Boy 5 Years Old

Museum of Modern Art Classes

(Photograph by Sunami)

osity to explore. Teachers often dislike transparent colors because they run. This fault may be avoided if each child works on an inclined or a flat table. In the case of vertical work, as in murals, the poster paints, thinned out with water for transparency, are recommended because they have body and can be controlled. Oils, however, should not be given to the young child, as they are too complex and difficult to manage. The paper should be large enough to accommodate the child's conception of space, allowing him the opportunity of working out his idea on a large scale.

The child's development at this stage is indeed both rapid and eventful. He begins with mere daubing of paint, often without response to color. Then color consciousness dawns, demonstrated by the juxtaposition of colors or the mixing of color on the paper. It is a real experience to watch a child who has just discovered that two colors mixed together will produce a new color. A pattern period comes next, during which the child makes various designs of stripes, dots, or swirls. This pattern making proceeds to a height of abstraction, demonstrated by grand dynamic masses of design and color well composed and balanced. Then comes a period of symbolism, indicating that the real world of people and things has broken into the child's consciousness. He represents them by self-devised symbols which appear flat and static (Plates XII and XIII). From this point the child gradually grows toward representation, when he is trying to communicate his ideas or imaginings through pictures. This young artist makes no previous drawing, but attacks the paper boldly with brush and paint, feeling his composition and design subconsciously as he goes along. There is very little teaching to be done in the dogmatic sense, but the teacher can encourage the child to work large, to use the space, to recognize the limits of the paper, and to use fresh, clean color when his brush is muddy. While the teacher has little control over the child's design, there is much he can do to enrich the child's experience and provide inspiration.

Plate XIV

Girl 10 Years Old
Museum of Modern Art Classes
(Photograph by Sunami)

From the ages of six to ten, as the child grows into the representation and communication of ideas (Plate XIV), the teacher can help to stimulate him by planning trips to the zoo and aquarium, or visits to places of interest in the neighborhood—the bakery or fruit market, the pet shop or the flower nursery.

While the effort should be made to keep the child working spontaneously, it may be necessary at times for him to use a pencil or a small tool to represent the detail in which he has become interested. When the quality of a painting depends on the fine pattern of line, a transparent medium, such as water color, should be used to preserve the fresh quality of the original lines. A child often faces bitter disappointment when he discovers that an opaque color has obliterated his careful and precious work.

In the upper years of elementary school, especially in the fifth and sixth grades, the child becomes a conscious designer, that is, he consciously seeks and considers the elements of design—line, mass, and color. It is very important that he experience them as a need or as a property in his own work; he should not be required to learn them theoretically in the hope of applying them later. The reason for this procedure is that the child will know more about the use of line, mass, and color if he learns it by working with these elements creatively, than if he learns it theoretically or through artificially devised problems. His effort to make the picture intelligible and effective will naturally arouse in him the desire to know how to employ these elements of design. The teacher can help him achieve this knowledge by revealing the special principle of design which will solve the problem. In this way the teaching meets a need felt by the child.

The most effective teaching, then, results when the principle taught coincides with a desire or interest on the part of the child, and when the child takes part in solving the problem. For example, a child will readily learn and remember the principle of balance when he realizes that the success of a definite piece

Plate XV

Girl 14 Years Old
Museum of Modern Art Classes
(Photograph by Sunami)

of work depends on its use. A child may draw or paint a picture which is obviously unbalanced because all of the drawing is placed on one half of the paper while the other half is left blank. He may feel that something is wrong, but he cannot detect what it is, or if he does, he may not know how to rectify it. The teacher can help him by calling his attention to the unused space, suggesting, although not telling him, that he may find his solution through it. By wise direction, he may get the child to realize that he can spread the drawing out over the blank area, or that he may add more drawing on the blank part to balance the part already drawn. In this way the child learns through self-discovery and actual experience and not through subservience to an empty principle.

While the child of four or six years of age possesses little or no sense of form other than a sense of line, flat mass, and color, the child of nine or ten attains a suggestion of form in the use of perspective. He suggests form by the contour lines of objects in perspective, by the receding of houses and buildings, by slight suggestion of foreshortenings in figures, and by the difference in size of the near and the far objects in his picture. He has, however, no sense of the change of form within a mass or surface, for this concept belongs to a later stage. Like the younger child, he fills in the areas with flat or blended color.

By the time the child is nine or ten years old, he has usually developed a good sense of dark and light value and some sense of pattern or texture. These elements are often apparent in the very young child's work, but they are more noticeable in that of older children. The child's experience should include as many painting media as possible, and the more advanced children may attempt some work in oils. Tempera and water color are the most successful media to use at this stage, and the bristle brush is especially suitable for large work. The child should work on both a large and a small scale, for while working in the large scale keeps his expression

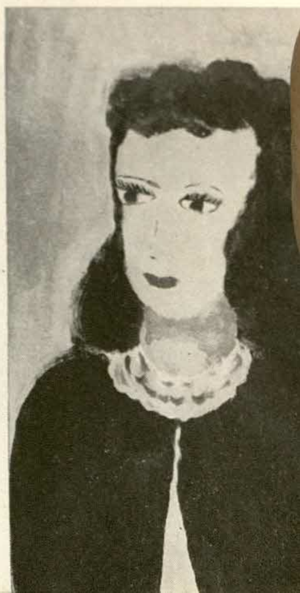


Plate XVI

Girl 13 Years Old
Museum of Modern Art Classes
(Photograph by Sunami)

bold and free, working in the small scale satisfies his desire for details and small work. Large work is a valuable experience for most young children, but its value is apt to be overrated. There are times when most children wish to work small because their idea demands a small area and a tool which will express delicate pattern and detail. At such times the teacher should be sensitive to this need and try to meet it. Then there are those who by nature work small, in little patterns and fine line. A large scale medium might inhibit this type of child and thus destroy the purpose of the experience. The teacher should, therefore, be conscious of such exceptions as these and make the experience fit the need. It will be profitable to use the easel often to encourage spontaneous work, and to go about the neighborhood and city for new material and inspiration, as suggested in the preceding chapter. Diverse subject matter is an important element at this stage, and the teacher will do well to keep the art activity alive through constant change of subjects. The other studies in the school, especially history, literature, and current events, should help to furnish a variety of materials for pictorial use.

Between the ages of ten and fourteen the child gains dexterity in drawing and painting and can deal with almost all subjects. His interest in the human figure is keen and he can easily avail himself of the opportunity to work directly from the model (especially from the seventh grade on) in free-brush work, putting in imaginary backgrounds. Self portraits in poster paints or chalks, poses by classmates, especially group poses, are particularly popular (Plates XV and XVI). In these years the young artist is gaining a sense of composition through the arrangement of the various elements in his paintings, and acquiring a feeling of line and of dark and light values through the medium of his paint brush. His sense of form in painting and color is still elementary and is revealed mainly through line contours and perspective.

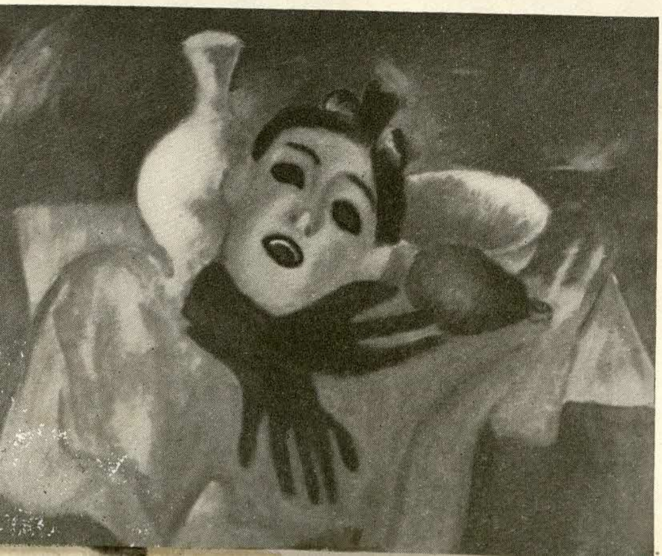


Plate XVII

Girl 17 Years Old

Fieldston School

From about fourteen to eighteen years of age, the developing artist perceives the true element of form. For example, he learns that by variations in the color and value of an object, form is achieved. He can be made to see that the color in a bowl moves and changes through light to dark, from the side where it receives the light to the opposite side away from the light. He also becomes conscious of edges, noticing that some edges of an object are sharp and clear, while others are soft and indistinct, and some entirely lost. He relates objects to the background and, to his amazement and satisfaction, discovers that colors affect each other, that a yellow vase against a green background appears different from the way it appears against a red background (Plate XVII).

Fortunately, not all these problems confront the student simultaneously, or he would be completely baffled and perhaps inhibited. The teacher should be careful to have him consider one problem at a time in a progressive order, working from the simple to the complex. For example, the student must gain a thorough understanding of the use of line if he is to express pattern, form, and texture. He must have a similar experience with dark and light, and finally with color. It is important, however, to emphasize that these experiences should not be divided into definite periods so that the student works only with line for an indefinite period until it dulls his enthusiasm or inhibits his use of other elements. It is probably advisable to work in cycles in which the student continuously experiences the three elements of line, form, and color, but to give emphasis to one element in a given cycle. Also, it is not important to begin with line and proceed to color. For some it may be better to begin with color or value. This order of procedure will depend on the particular needs of each student. Let us say that during a certain period the student will explore the full potentialities of line in design, but will use value and color subordinately. When the student is studying color, it will be wise to give him at first a simple palette with a few colors and to increase his palette as he gains power. In addition to the problem of color value, there will arise the problem of painting texture and technique. The student will have to decide on the expression that is best for him, and learn, by a technique all his own, how to portray the texture of an object in a given painting. He should keep in mind the elementary consideration that the painting should follow the form. A most helpful means of studying form will be found in the analysis of works of masters like van Gogh or Cézanne, whose technique reveals the concept of painting following form, and, at the same time, keeps the character of the artists own personality distinct. The student must be careful, however, not to imitate the work of the masters, and the teacher should not give the class a set procedure which might develop into a set pattern, but should aim to develop meanings instead of mannerisms in his students.

The Teaching Process

The teaching of painting should be, as far as possible, related to the original work on an individual basis. That is, the study of form should be associated with the definite problem that a student encounters in his original painting. Also, the student should be confronted with only those problems that are within the range of his understanding. It is to be expected, with the varying capacities and intelligence of children at this age, that individuals will develop at different rates of speed and that their ability to grow will depend on their ability to understand and assimilate new concepts through their own experiences. However, the teacher learns to be a better critic of his students as he learns their aptitudes by watching them.

Group exercises and problems should be employed only to meet general group needs, such as painting from the life model to master the figure. Set-up or posed problems, such as still life, should be avoided or used with discrimination, as many problems of this kind tend to atrophy the originality and produce formalities and stereotyped results. They make the student dependent on models and tend to emphasize technique above original expression. The Mexican teacher's method, described in Chapter One, that is, his use of two studios, one for imaginative work, the other for studying drawing and painting of objects and figures, may be helpful at this stage. When a student encounters a problem in his creative work he goes into the study studio and works until he has mastered it. Then he returns to his original composition. In this way the originative concept is emphasized. Of course, it is not essential to have two studios to work out this method. The student may merely stop his original project and make a special study of the problem which has puzzled him, and when he has solved it he may return to his original project. Formal results are also the outgrowth of the tendency on the part of teachers to give directions too specifically in dictated steps, instead of allowing the child to solve his problem in his own way.

As a general rule, we can assume that any process or approach is wrong if it develops a pattern within a group, regardless of its soundness of principle, or the startling results which it produces. Even modern and progressive teachers often set their pattern on students so that it is easy to recognize by the style of a student's painting with whom he has studied. A good teacher will demand the same individual quality and personal approach to a study problem or exercise that he does to the original work. The individual expression is always more to be considered than skill or draughtsmanship.

The Problem of Composition

Composition, the structure upon which creative painting is built, is an ever-present problem with the artist. As has been stated, young children use the elements of composition more or less intuitively, but the older child, lacking this sensitiveness, must consider them consciously. That is, the older student must be aware of how to use these elements in his own work and must be able to recognize their presence in works of others as well as in the subject matter he chooses. At this point it must be definitely explained that by *the conscious use of the elements of composition,* we do not mean that the child must master the rules and go on a hunt for particular compositions that will fit his rules. Nor do we hope that he will go out with the scientist's eye, to analyze and dissect every painting or scene to discover whether or not it is done according to prescribed law. There is too much of the mind in such a process, and too little of the spirit. Good composition requires intellect and emotion. The artist not only recognizes the use of the elements of design, but also feels them. It is important, therefore, for the young artist to focus his attention on these elements for themselves, so that he may both feel and recognize their intrinsic qualities as aesthetic values. Subject matter for creative work involves so many complex problems that the beginner is easily misled or attracted by factors of secondary importance, such as correct drawing, realism, or detail. It is important, therefore, that the child study his subject in order to decide or to discover its design elements. For example, let us suppose that on one of his excursions into the city a child chooses a group of apartment houses as a likely subject. In looking at it, he sees that the scene spreads out and he recognizes it as a horizontal composition. Studying it further he discovers that the main lines are horizontal and vertical. Therefore, he transfers his impressions imaginatively to his paper to see how it will best fit the shape. He may at once realize that he must use his paper horizontally and proceed to plan the picture to fit it. He feels that the picture must have a focus, or "a point of interest," as the artist calls it. This point of interest may be an action, a building, or a person or it may be a number of persons or things. Then comes the problem of dark and light which the artist meets consciously or subconsciously. For example, are the tenement houses in the picture to be dark against a light sky, or light against dark? Are the people in the street to be dark or light against the building? Thus the picture is built up toward color. The problem of color will be discussed later in the chapter.

It is important to mention that this analysis of and emphasis on composition should be undertaken after the student has gained a freedom and power of expression, and when he indicates a desire or need for it. If the student has had a great deal of experience with spontaneous painting in imaginative work and in working from observation, he will have a feeling or an intuition for design which will prepare him for a more studied approach. By the time the student has reached high school he should be able to consider composition as a serious conscious study. However, it is necessary to realize that the structural elements of composition should be integrated with the idea or character of the painting, that they should not be obvious or labored, lest the observer be made too aware of their use. While all true artists are masters of composition, one is not immediately conscious of it. One is more concerned with the individual idea or style of the artist. At least the elements that go to make up the picture are blended into an integrated whole to which the observer responds.

In an extensive study of composition, one recognizes distinct categories into which all subjects will more or less fit. It is well to make them known to the young artist to help him in analyzing and organizing his own subject matter. They are not to be considered as classic types or as hard and fast groups, but only as points of departure or as a means of simplifying a complex and varied problem for the beginner. The following classifications are suggested.

Horizontal and Vertical Line Compositions.—Certain types of subject matter fall into the broad field of horizontal and vertical compositions (Plate XVIII). Among these types are two tendencies, the tendency for the vertical accent and that for the horizontal accent. Both types include all subjects that emphasize the straight line and are most common in the use of architecture, as tenement houses, modern office buildings, and factories (Figures 1-8). The vertical emphasis may be felt in the uplifting lines of cathedrals, skyscrapers, smoke stacks, tall trees such as the giant redwoods of California, or

Plate XVIII

Boy 17 Years Old
Museum of Modern Art Classes
(Photograph by Sunami)

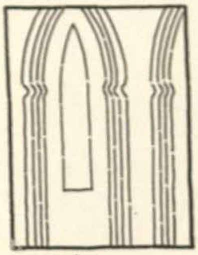


Figure 1

in slender blades of grass or weeds (Figures 1-4). The emphasis of vertical line in natural subjects may be seen in Japanese brush work and prints. Figures also may constitute a vertical design, as standing figures, for example: "Two Tahitians" by Gauguin, and El Greco's elongated figures.

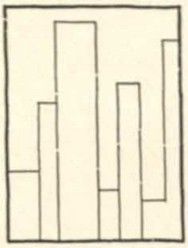


Figure 2

The horizontal emphasis may be observed in architecture as well as in nature (Figures 6, 7, 8). In Egyptian and Greek architecture we see the pure use of horizontals and verticals, with the emphasis on the horizontal. Modern architecture also, especially in factories, schools, theaters, and homes, shows a distinct horizontal tendency as is illustrated in the architectural designs of Frank Lloyd Wright and Richard Neutra. In nature we feel the effect of the horizontal in the extending lines of a beach or the roll of waves (Figures 7, 8). Single figures and groups may also produce a horizontal composition, as illustrated in the painting "Venus and Cupid" by Velasquez and "The Burial of Count Orgaz" by El Greco.

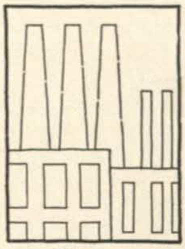


Figure 3

Horizontal and vertical lines are lines of balance and poise. They lend height and dignity, breadth and space. They are strong and firm, and may both oppose and balance.

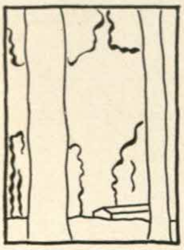


Figure 4

Angular Line Compositions.—Subjects or works of art in which the oblique line is distinctly felt come under the heading of angular line compositions, for example, a village of sloping roofs or a mass of sailboats in a harbor (Figures 9-11). The slanting lines which characterize rain also come under this heading and the design effect which they produce may be seen in many Japanese prints. Rugged rocks, soldiers on parade with guns shouldered, trees blowing in the wind, are other examples of this type of composition. Thus this movement may be found in buildings, nature, and in figures, especially those denoting action. Angular lines lead the eye along with great speed (Figure 9). For this reason they must be used with consideration, for if they are not well planned, they can easily divert the attention to the wrong part of the picture or carry it out of the picture entirely. They must, therefore, terminate within the picture

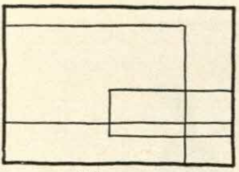


Figure 5

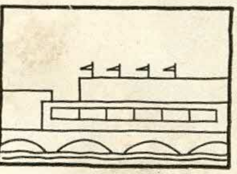


Figure 6

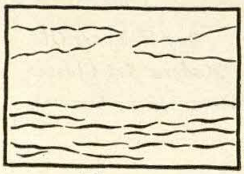


Figure 7

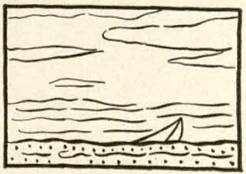


Figure 8

or be stopped or opposed by another line. An oblique line may be stopped by a vertical or horizontal line. Examples of this use of lines are seen when the sail of a boat meets or crosses the horizontal line of the body of the boat, or in a zigzag of lightning received by the vertical column of a tree. Angular lines may well oppose and therefore balance each other. For instance, in the village with sloping roofs, which has been cited as an example, the various lines thrust against each other. These lines do not always have to be opposed, they may blend or disappear into other forms and values, but it is important that they carry the eye to the central part of the picture. If a line is directed away from the center of the picture as in the case of a leaning tree trunk, it establishes a pull from the center, and another line must be established at the other side of the picture, pulling or leaning in the opposite direction to produce a balance. Trees growing at various angles illustrate this type of compositional arrangement (Figure 12). Oblique lines are dynamic; they lend movement to composition; they are symbols of unrest, chaos, storm, and conflict. This dynamic use of line may be observed in the free and dashing water colors of John Marin, which sometimes represent a burst of angular lines.

Curved Lines and their Variations in Composition—Curved lines are slower moving and more graceful than angular lines. They form excellent transitional movement between other lines and masses (Figures 13, 14). Their effect may be observed in the sweeping lines of bridges joining vertical piers, in the soft flowing contours of hills or clouds. They carry the eye along easily and freely. For this reason, care must be taken that they lead into the picture or center of interest, as they may easily destroy the composition if they are not well directed. The more a line curves, the more rapid will be its movement; for example, the line of the bridge moves faster than the line of the hill (Figure 15). Fast-moving curves must be stopped by other lines just as angular lines must be stopped (Figure 16). A curve is best stopped by another curve. While curves lend rhythm and unity to a picture, they may also produce opposition if their thrusts are thrown

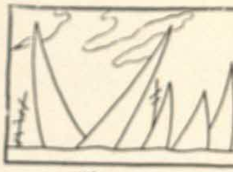


Figure 11

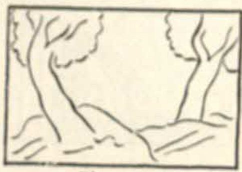


Figure 12

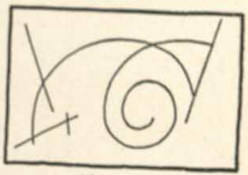


Figure 13

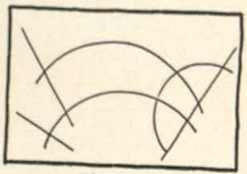


Figure 14

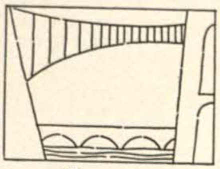


Figure 15

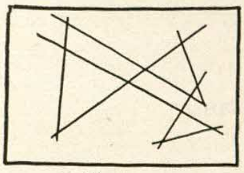


Figure 9

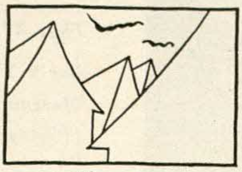


Figure 10

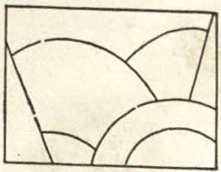


Figure 16

against each other (Plate XIX). There is a splendid example of this principle in a detail of Diego Rivera's murals at Cuernavaca, called the "Sugar Cane Gatherers" (Figure 17). In this composition, Mexican peons are carrying stacks of sugar cane on their shoulders. The figures of the men are leaning forward, their bodies making a curve, while the sugar cane on their shoulders makes a long reverse curve. One gets a feeling of the curve of the bodies thrusting against the opposing curves of the bundles of cane.

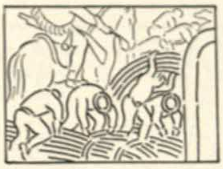


Figure 17

Variations of Compositions.—The young artist will obviously not always encounter these specific classifications in their pure form, but will most often find combinations of them in a chosen subject. For example, instead of a pure horizontal or angular composition, he will find that both horizontal and angular elements occur in the same picture. He will, however, notice or purposely emphasize one of these movements, or his composition may become confused and chaotic. It will be advisable for the beginner at first to use composition in the simple classifications just described and later to attempt the more complex variations. An excellent example of the use of the vertical, horizontal, and angular line in a single composition may be seen in Rembrandt's famous etching "The Three Trees."

Other Factors of Composition

When the young artist has gained a general understanding of composition, he can give attention to other design principles involved, such as the following:

(a) Proportion in Lines and Masses.—In organizing his composition, the sensitive designer will have a feeling for the relationships of lines and masses, that is, all lines and masses will be proportioned in relation to each other. The designer senses these relationships and works them out approximately, but the scientific person, as the exponent of dynamic symmetry, often works out lines and masses mathematically exactly; that is, one line will have proportionate

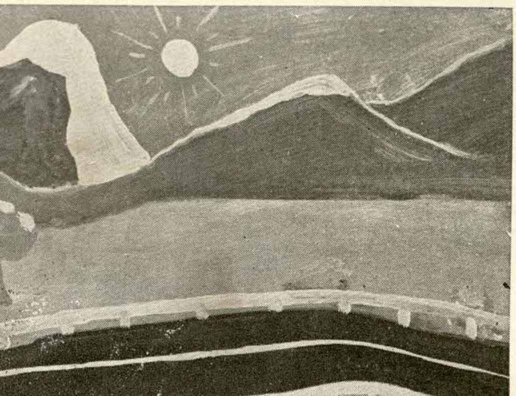


Plate XIX

Boy 9 Years Old
Museum of Modern Art Classes
(Photograph by Sunami)

relation to the other of one-half or two-thirds. It is important to get the child-artist on the upper level to become conscious of these relationships, but he should be discouraged from assuming a mathematical attitude toward them. It is very easy for the child or the teacher to go off at a tangent and lose the value of the principle by over-exaggeration.

(b) Center of Interest through Emphasis.—A good composition has a focus of interest, that is, a place toward which the eye is directed. The center of interest may be emphasized by size, making it larger than other forms; placement, establishing it at the center of the picture; line direction, making lines lead to it; value, rendering it lighter or darker than the rest of the picture; color, making it more attractive in color than other forms; pattern and texture, emphasizing the pattern and texture of the forms which comprise the center of interest; and action, putting the most dominant action at the center of interest.

(c) Subordination of Related Parts.—When the young artist learns the means of accenting the center of interest, he can recognize the importance of subordinating or reducing the other parts of the composition to it. Subordination is brought about by making the other parts of the composition smaller in size, less interesting in contour or shape, and not so contrasting in value or so intense in color as the center of interest.

(d) Harmony or Unity of the Whole.—While the student may come to conceive of both emphasis and subordination, he must also bear in mind that the whole picture should hold together, and may recognize the means of accomplishing this result. For example, he should discover that certain lines and rhythms repeated in the figures and background tend to unite the picture, also that the relationship of color and values helps to achieve the same end.

(e) Variety to Give Accent to the Picture.—The student may come to realize that while repetition and relationship of line, value, and color bring about unity and harmony in a composition, over-

emphasis of these elements will result in monotony. He will, therefore, guard against monotony by introducing an opposing line, or a contrasting value or color when he feels the need for it, or when the composition begins to appear uninteresting.

There is a great danger in working by rule. If, for example, one accepts the principle that a horizontal and vertical composition in good proportion will result in good design, he may overlook the fact that it is also monotonous. However, if his work is motivated by feeling and a desire for innovation and self-expression, as the true artist's work is, he can avoid stereotypes. These suggestions should be regarded only as avenues of thought and fields of discovery and not as rules, principles, or formulas. As the latter, they are worthless. It is best for the child to work by trial and error toward truth if a discussion of rules tends to confine him within their limits. These suggestions are presented more for teachers than students. It is hoped that teachers will regard them so.

A perfect illustration of the use of the combined elements and principles of design just described is found in the famous "Last Supper" by Leonardo da Vinci. The composition is horizontal with the table and the arrangement of figures stressing the horizontal movement. The focus of interest is the figure of Christ, emphasized by placement at the center of the picture and by the disciples looking or pointing toward Him, and further brought out by being silhouetted against the light and framed in a vertical window. Delicate values and lines of the beams in the ceiling also direct the eye to Him. The other figures are subordinated to Christ's figure by reason of their positions away from the center of the picture and by less conspicuous values, color, and pattern. A feeling of variety is achieved by the fact that some figures are turned away from the Christ figure, that the groups are divided into masses of various sizes, and that the vertical window at the back and the oblique lines of ceiling and floor oppose the dominating horizontal elements of the picture. Thus we have all the elements illustrated in this single painting.

The foregoing discussion is presented to illustrate the abstract problems of design involved in composition. Such an analysis of design should be related to problems that arise in the student's experience and should not precede the original experience. That is, a child should not be taught through hypothetical problems in composition, nor should he set out to look for an angular or a horizontal composition. He should have the power to recognize, both by intuition and by analysis, the problems of design involved in a subject which he has undertaken to express. Continued experience of the elements of design in his own paintings should give him the ability to appreciate these qualities in the works of others.

Subject-Matter Interests

At the secondary school level, the student has gained a great deal of power to perform and is capable of using almost any subject. His subject-matter interests cover a wide range, but are mostly concerned with human problems and interests. The home and community will therefore provide rich and plentiful material for compositions, for they include intimate and interesting subject matter of easy access to the student. At this period in his advancement, the student is usually filled with a great desire to do portraits which may be turned to an interest in character studies. The interest in great social problems, the desire of students at this age level to free the world of all its ills, may lead to the use of social subject matter, especially those problems that arise in the study of current events and history. The mastery of problems of such a broad scope affords the student an opportunity for research in acquiring both incidental pictorial material and broad themes. This research should be an aid to the learning process in all subjects concerned.

The Child-Artist as Colorist

There are few media to which a child responds more quickly and enthusiastically than color. For this reason it is important to keep the color experience, for the young child at least, on the emotional level. He finds both solace and inspiration in its use; it either pacifies or stimulates him. Those who work with very young children know that they do not see color merely as paint, but seem to have an emotional reaction to it. They may react ecstatically to bright colors and be unresponsive to somber ones. For instance, the writer has heard children refer to yellow as "sunlight" and to red as "fire" and to deep blue as "night color."

Young children play with colors, as they do with design, in an abstract way. Therefore, it is important that color should be experimental at this level. A child should be permitted to play with color and to discover its possibilities through his own mixing. This procedure necessitates a simple color range, the primaries, for example; he will discover the secondaries and tertiaries by himself, though of course he will not use this vocabulary. The tendency of most teachers is to put too many colors before the child, thereby confusing and upsetting his color sense.

One artist-teacher has a unique way of developing the color sense in a child. She holds a box of bright chalks before him and asks: "Which would you like to have?" When the child has selected one, she adds: "Now take the color that the one you have is asking for." Thus she develops a real color sensitiveness by making the child think about color and respond to it in his own way. How different is this approach from the dogmatic method of teaching color theory! In the latter method the teacher would begin to explain analogous or complimentary harmony, give a rule for producing each, and thus, at the start, destroy the color experience.

It is difficult to say which colors a teacher should select in beginning with young children. It seems that those colors to which they respond naturally would comprise a good basis. Children differ in their responsiveness to color according to their special make-up or conditioning. It has often been said that individual color abilities differed with the nationality. But there is no adequate evidence that such a condition is true. Superficial differences seem to appear, but they are the result of background or traditional experiences. There is no nationality or group which has special natural tendencies toward color. Color response or taste is a matter of individual disposition and training. In regard to teaching, the important consideration is that method should be based on experiment and discovery and not on predetermined principles of color.

The experimental and emotional phases of color experiences should be pursued in the education of the child-artist through the elementary and junior high school years. This method of development does not imply a laissez-faire attitude toward the problem, but a process in which the child grows through conscious emotional experiences. As indicated in the other phases of educational approach, the experimental method will necessitate individual teaching, since children differ in their responsiveness to color just as they do in design and composition. The teacher must strive to keep the enthusiasm of the children for color alive, as mere playing with color soon tires the visual senses, especially in the young.

A selective color palette, based on individual need, will be advantageous at all times. Examples of individual needs in respect to color may comprise such problems as a lack of response to color values, or a need for change from warm to cool colors. For instance, most children must be introduced to the use of earth colors, for they habitually use the standard colors, or need to be encouraged to be discriminating in their choice. Limiting the color palette to three or four colors, or earth colors and two brilliant colors, produces a good experience and is fun for the child. This selection is suggested to simplify the problem for the child rather than to restrict him. Children are often confused by too many colors. Also, if all the colors are prepared for them by manufacturers or teachers, children lose sight of the possibility of inventing their own colors and come to regard color merely as a "canned" product.

Commercial supplies companies, through the habit of standardizing colors and reducing art to easy lessons, have tended to atrophy the color sense of the individual. Children are often able to see color as mood in relation to their originative subject matter, that is, night subjects may be interpreted in neutral or cool colors and day subjects may be interpreted in warm colors. The teacher may indicate the interpretation of color into personal moods, but he should not dictate which colors fit the mood, since that would be imposing a pattern on the child—to say, for example, that reds indicate enmity while blues indicate friendliness. Children respond differently to colors; one child may decide that blues and greens express loneliness for him, while for another violets and reds express that feeling.

Teaching Color Theory

The teaching of the theory of color by means of the color wheel, color harmonies, and scales, as an end in itself, is of very doubtful value in art education, and the creative teacher has abandoned this method as harmful since it tends to inhibit the use of color, rather than to develop color consciousness. The reason is that it does not depend on visual experience, but on logic. The memory, and not the emotions, controls the process. It is like giving the child the answer to a problem and then asking him to work it out. The zest has been taken out of the experience because the child already knows the answer. Most teaching of this type is merely memorization and is not actual experience. In color, as in any other form of expression, the personal and the unexpected are to be prized; they distinguish the individual response from the commonplace, and the unusual from the average.

Use of Naturalistic Color

Naturalistic color often troubles the adolescent because he is divided between the impulses to do what he likes and what he thinks he should do. His own impulse tells him to use color emotionally, while reason dictates representation. It can be made clear to the student that he has as much right to change colors as he has to change his composition or ideas. The student is not a photographer, he is an artist. He does not copy, he interprets. Whatever he feels is right and interesting to do should precede any tendency to imitate nature. Individuality is the soul of the picture. An individual who is freed from this worry of realism should not be troubled further, but an ardent realist should be permitted to go through his cycle of realism in spite of the dictates of art, for the child, convinced against his will, loses his own identity as an artist and an individual.

The problem of realistic color rarely concerns the individual who has had his sense of color developed from early childhood and who has learned to consider color as design or to use it emotionally. It does, however, dominate and confuse the older child and the adult who begin their study of art at a late stage of development. For them it is best to begin their color training as the little child did, with experimentation in color as an emotional and play response, removed from the subject-matter concepts.

The senior high school student has a mature mind and can approach the study of color with a deeper understanding. He should explore farther than the young child and learn something of color science and light phenomena. This knowledge can be developed in the science studies, thereby making art a more extensive experience. Color psychology, that is, the way color affects people, will also interest him and increase his understanding of color. The scientific attitude, however, should never dominate the individual reaction and the imaginative use of color, but should help to extend its application and use. In the painting experience, the older student should have a more varied palette, for he can carry experiments in color farther than the young child.

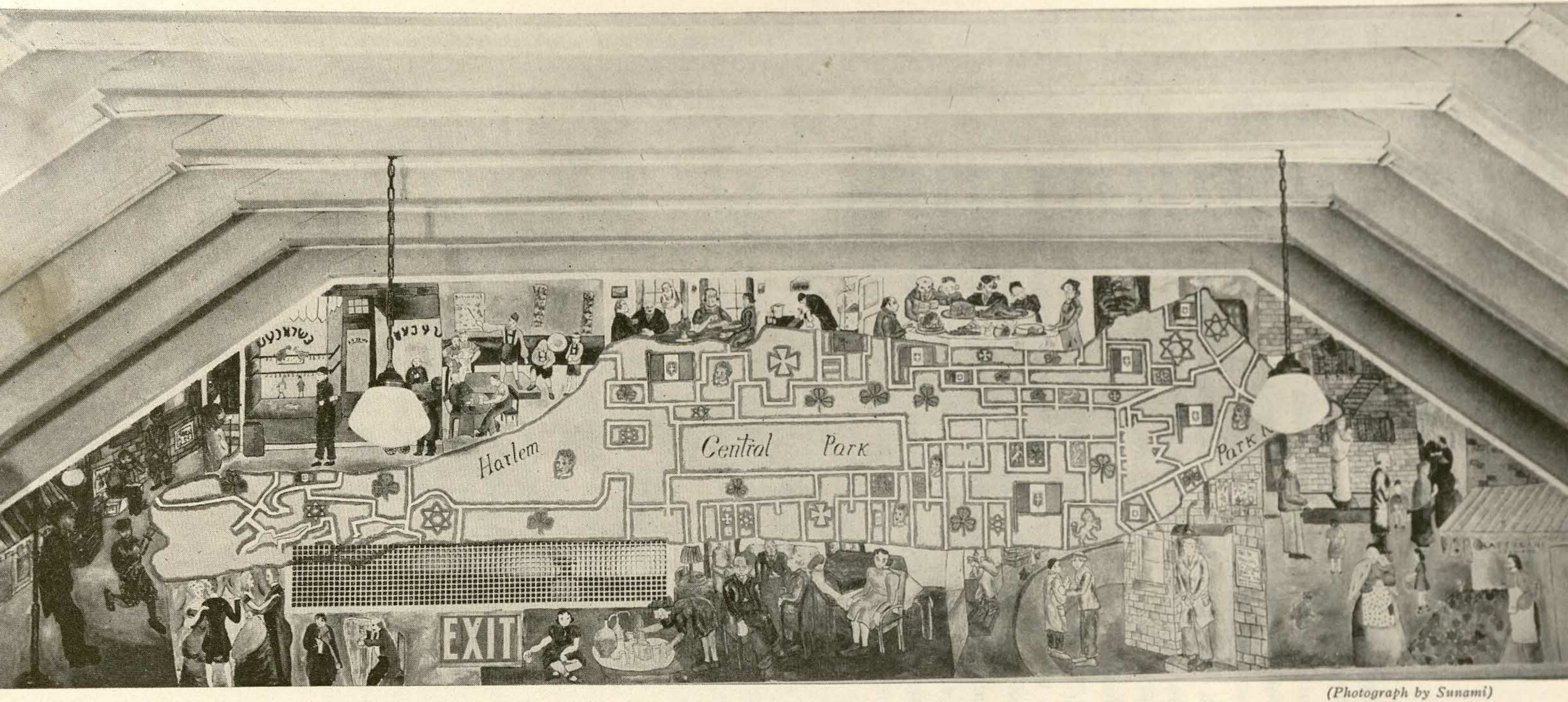
It would be unwise and probably impossible to give a color palette which would suit all individuals and purposes. The student should begin with a basic but ample set of colors. Colors that are likely to distort the sense of color, such as magenta or turquoise, may be omitted at first. Violet, too, may well be removed from the beginner's palette as it tends to promote sentimental and impressionist use. When the student has adapted a color range of his own, he can add or subtract colors as he chooses.

For some students, it is often wise to separate the study of color and black and white values by giving the students an opportunity to paint in black and white, so that they may derive the concept of pure values. But this plan will depend on the individual, and the teacher should not follow it indiscriminately with all students because they may not all need the experience. However, it should not be attempted with younger children, as it confuses their color sense, for they have little idea of transition from black and white values to color. Black and white may be developed as a sense in itself in various media that make it possible such as block printing or etching.

Summary

Throughout this chapter the aim has been to show the development of the child as painter by means of awakening his imagination and consciousness to aesthetic values in life; to use the child's expressive self as the basis for all his learning; and to avoid formal or conventional thinking and doing by the dictates of general procedures and principles of art that deaden the originative spirit. In every case, we have considered the individual as the means and end to the concept of art. We have traced the development of the child from the pre-school age through the high school, showing his behavior in art experience, and indicating ways of meeting and satisfying his needs. Materials have been employed as ends in the aesthetic and psychological growth. At the same time we have traced the development through subject matter, design, form, and color, and have shown their interrelationships.

In retrospect, these ideas stand out: The child progresses from a subconscious use of art values in the early years of school to a conscious use of them in the high school. Each child should be regarded individually and should develop at his own rate of learning. In teaching, the main advantage is to "strike while the iron is hot," that is, to teach when there is a need, or when curiosity has been aroused. The aesthetic values are best learned through personal experience, rather than through general concepts; they should be discovered through activity, not dictated through principles. The art experience is more emotional than intellectual, especially at the lower age levels.



(Photograph by Sunami)

Plate XX—"Manhattan"—A mural for the home arts department made by two high school girls. The mural shows the location of different racial groups and nationalities in Manhattan. Typical neighborhood scenes are illustrated in the border surrounding the map. Size of mural, 5 by 16 feet. Oil on canvas. Fieldston School, New York City.

Chapter Three

The Child as Mural Painter

The Aesthetic and Social Value of Mural Painting

Because of its great artistic and social values, mural painting has become one of the most successful and popular expressions of art education. As an art value the mural meets the needs of every age because it can be developed as a simple or a complex process, depending on the child's capacity. It allows for the large, bold, spontaneous expressions of the young child and the more studied, thorough compositions of the older student. It encourages freedom of execution and the development of the imagination, for it requires large movements and broad concepts. The young artist is challenged and inspired to exercise his greatest powers and his best ideas to make the mural a success, since he wishes to satisfy himself, but at the same time feels responsible to his public.

In fact, the distinction between the easel painting and the mural is that the easel painting is apt to be a highly personal production, while mural painting is generally intended for social satisfaction (even though the society may be only one's classmates), and must bear the test of the ideals and values of the group. The mural painting also helps to correct working too minutely by magnifying details and encouraging large movements. Likewise, it often points out difficulties in drawing, design, structure, and composition that go unnoticed in the individual work because the increased size of the mural also magnifies the difficulties of its execution. Children in particular often find it difficult to recognize mistakes in small scale work, but these mistakes become almost obvious in large scale productions.

The mural project, therefore, affords an excellent opportunity for the teacher to help the student to recognize his own problems and to solve them, too, because the student wishes to overcome every obstacle to the success of his mural. One group mural can provide more vital experience in teaching and learning than a score of classroom exercises, for it affords one of the few natural opportunities for group teaching, since every one of the children engaged in work on the mural is personally concerned with all the problems involved in achieving its success.

The Individual and the Group Mural

Many social values can be derived from the experience of working together on a mural. The unity of idea and effort required of the whole group, the discipline of conforming to common standards and keeping up to one's best achievement—all contribute to the child's education. The children will not only strive for the success of a common project, but they will learn to work together, to help each other, and to become more tolerant and respectful of one another's abilities. Moreover, these unseen values derived from such a process of work far outweigh the completed, concrete product.

The mural project can give each individual a sense of belonging to the whole, and can help him to subordinate his ego to the success of the larger experience. Thus it can help to offset the undesirable results of over-individualism produced by too much emphasis on self-expression, and can lead to an experience of the supra-personal. The arrogant, or supercilious, or too intellectual child is soon disciplined by the group; the timid or the unsocial child, or the child who feels inferior, may gain a sense of importance, usefulness, and stability in having a part in the group undertaking. Painting a mural fosters sympathy and interest between the young artists and society, since it often reflects the ideals and problems of society and is produced for the enjoyment and satisfaction of society.

Examples of Mural Projects

The mural project provides subject matter of broad social interests, and may at one time or another involve the cooperation of most school studies. It can, and should, use as subjects events of both current and historical nature in which the social, physical, and natural sciences play a great part. Since the student is engaged in these studies, their material is vital and interesting to him, and should provide enrichment to both his art and his cultural experience. The following mural projects, executed by various grades[1] will serve as examples of the other subjects which might be used appropriately in the experience in art.

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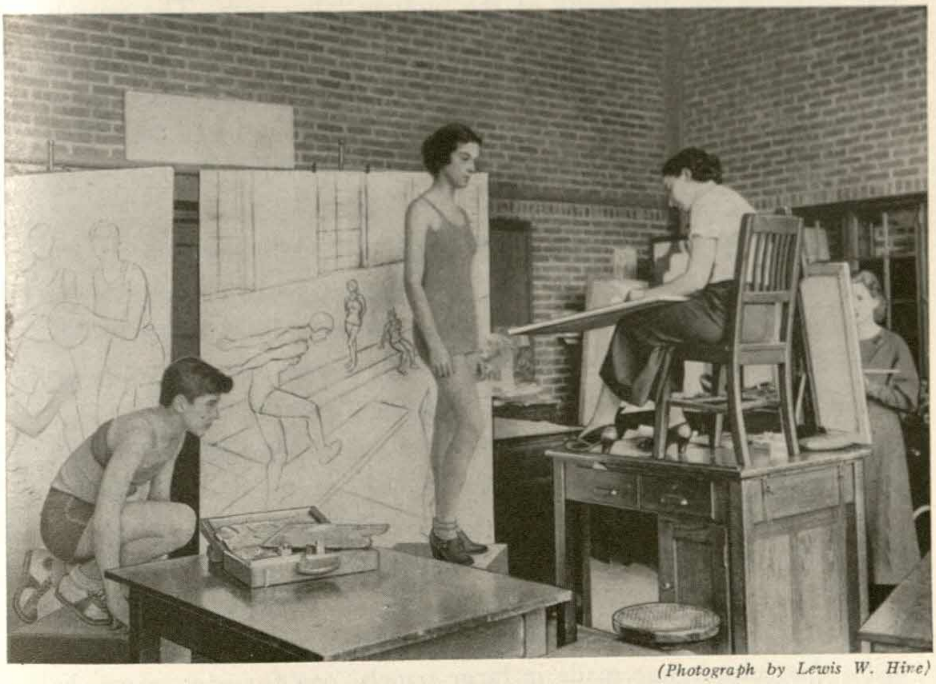
[1] In the Fieldston School of the Ethical Culture Schools of New York City.



(Photograph by Lewis W. Hine)

Plate XXI—Students Designing Murals for the School Gymnasium, with Students Serving as Models.

Historic and Modern Games.—An extensive mural project was carried out by classes in every year of high school, each class taking a particular historic phase such as Greek games, medieval games, and modern games. The project was undertaken for the decoration of the gymnasium and was produced through the combined efforts of the Departments of Arts, Athletics, and History. Students volunteered as models, and gave up the gymnasium classes in order to pose for the art students (Plate XX).

The Story of Foods.—A set of panels on the sources and preparation of food was made for the school dining hall. The background study for these murals required several excursions to markets and food stores. The help on the story of food given by the Household Arts Department was invaluable.

Evolution of Man.—A set of murals on the evolution of man was executed for the walls of the biology laboratory. The murals illustrated the study of biology, a subject which was of particular interest to the junior class at the time. The science teacher provided the background study needed for the undertaking and was invited by the art class to discuss the authenticity of the subject matter in the murals.

The Home in Civilization, and Women's Achievements.—Two large murals were made for the household arts room by a second-year high school group of girls. One represented the place of the home as the center of all civilization, and showed the various industries and professions which serve the home; the other depicted the achievements of women in professional life. The background of information necessary for the execution of these murals was obtained by the student group from the teachers of household arts, who gave brief talks on these subjects and supplied the students with mimeographed lists of source materials.

History of Games from Ancient to Modern Times.—A mural using this subject was made in large panels, one for each game, by a seventh grade class for the school game-room with the help of the history teacher. The project required many trips to the museum to acquire the necessary information.

Individual Panels on Historic Subjects.—In a second-year high school class, each student illustrated a particular part of his study of the outline of history by an individual panel in dry fresco. The project was directly related to the history class, and the teachers of both art and history cooperated in supervising the work, the art teacher for aesthetic values, the history teacher for content. The results of this project proved that children can use historical material and still produce a wholly original composition.

It is often important for a child to have experience in working on a mural individually as well as in the capacity of a member of a group, so that he may have the advantage of carrying out a large piece of work by himself under his own power and imagination. There are few experiences which are comparable to the satisfaction and responsibility felt by the child who, all by himself, undertakes a large project like the mural. He will tax every ounce of invention and skill that he possesses to achieve his best results, and will dig into deep and difficult sources for the needed information.

Children will often spend hours in a museum or library, making sketches or obtaining data for their work. It is important to point out that the student must not copy, in any sense, but should acquire information on the appearance and use of things which feature in his mural. Thus a student may wish to know the type of costume worn at a certain period or the appearance of some prehistoric animal. These details cannot come from his imagination, but must be carefully studied and observed. The way in which he employs them in his mural will, however, require ingenuity and creativeness. The teacher should be aware of any tendency to copy or "lift" pictures from other sources and make clear to the student that the purpose of research is to gather necessary information for carrying out an original project. Thus the art experience extends his cultural and life interests and helps him to build habits of lasting worth.

Art as Propaganda

Current subjects provide vital and fertile sources for mural painting whether they come from within the school or outside it, while events that influence the child's imagination usually find their way into his art. In selecting his subject matter and ideas, however, it is important that the pupil should realize that the problem chosen should come within the scope of his ability to handle it. Often an ambitious teacher will foist upon the child adult ideas or problems which are beyond his powers of comprehension or execution. When this is the case, the child will grow to distrust his own ideas and to lean heavily on adult influence and assistance.

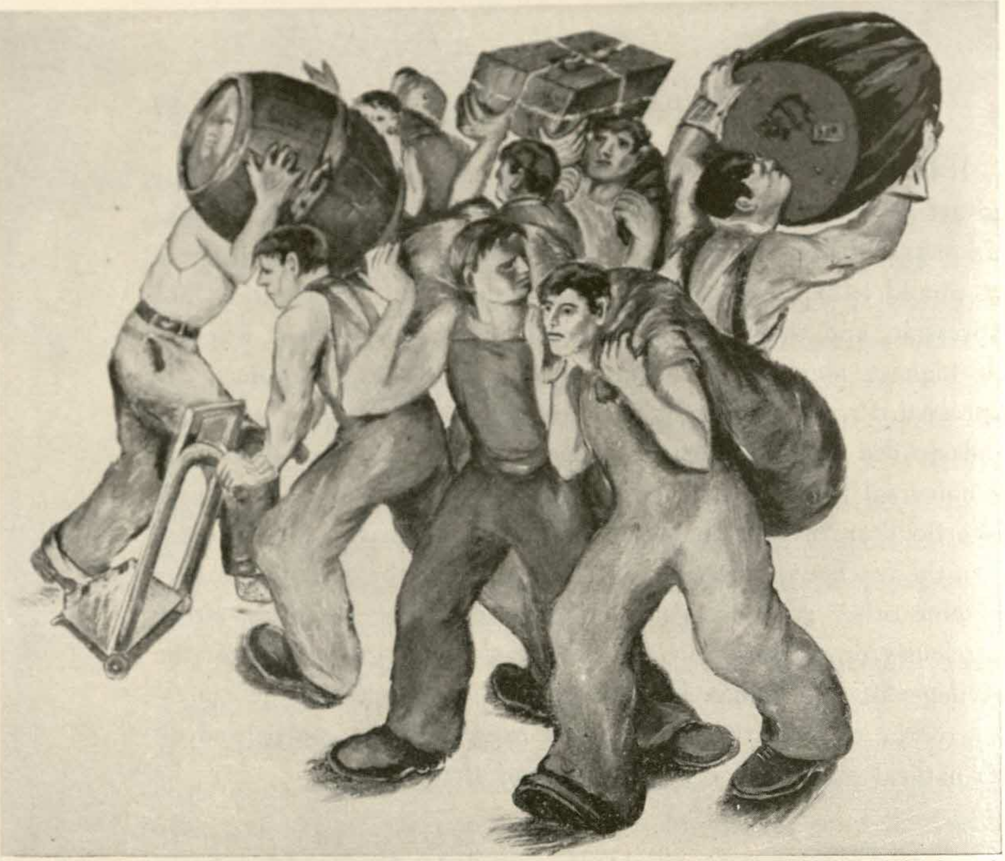
The writer once discovered that a class of six-year-olds making a mural were depicting labor under the yoke of capitalism. Of course it is obvious that this subject was beyond the interest and comprehension of six-year-olds, but the theme was introduced by a teacher who was herself concerned with labor problems. She felt that the children should also be interested in such problems because she considered that their fathers were being subjected to inhuman working conditions. She did not see that, even though the children were affected by the situation, they were too young to recognize it. While this is an exaggerated case, it may help to point out more subtle means often used by teachers in foisting adult ideas upon youth. Other subjects often treated in school murals are strikes, bread lines, and anti-war propaganda. If these subjects are directly within the child's experience—a child living in a mining region may observe the effects of coal strikes with his own eyes—they are probably legitimate subject matter, and it is well that a child express his feeling regarding them; but to deliberately present these themes for child expression, or intentionally to stimulate his interest in them, is to the writer's mind, an abuse and a distortion of the child's sensibilities, particularly when there are interests, too many to number, that children are naturally eager to experience.

It is doubtful whether propaganda is ever a worthy medium for the art expression of the child, even though many schools practise this phase of art and call it social consciousness. The experience in art should help to develop and to fire the child's imagination, not depress it, and the art medium should be the instrument whereby the highest ideals of man in thought and aesthetic values are expressed. Propaganda art is likely to be biased and abnormal, and it tends to use art as a weapon in some controversy, thus destroying its universal meaning, purity of expression, and timelessness. These distortions are usually the result of the subject matter having come from the teacher or another adult. When this is the case, the teacher or some other adult is projecting his interests on the class, either consciously or unconsciously, which may well be a gross abuse of the privileges of mentorship. If we accept the inner urge and the expression of the child as the basis for art expression, we can depend on the natural and genuine performance of the child.

Two Processes in the Development of the Group Mural—The Assimilative Process and the Competitive Process

To bring about a unity both in the social experience and in the finished project, some means is necessary for harmonizing the varying abilities and styles of working of the group. The writer has found two devices useful.

The first may be called the assimilative process. In this process the individual compositions of the various students in the group are organized into a single pattern, into a sort of mosaic. Let us take as an example the problem of the group of eight- to ten-year-olds who made sketches of New York from the observation tower of the Chanin Building, and who later decided to convert them into a mural. The various sketches were laid on the floor and studied by all the children. The sketch of the Empire State Building was selected as the central interest because it was dominating and inspiring, and



(Photograph by Sunami)

Plate XXII—"Stevedores"—A Mural for the Dining Hall Done by a 16-Year-Old Boy. Mural size, 8 by 10 Feet. Oil on Canvas. Fieldston School, New York City.

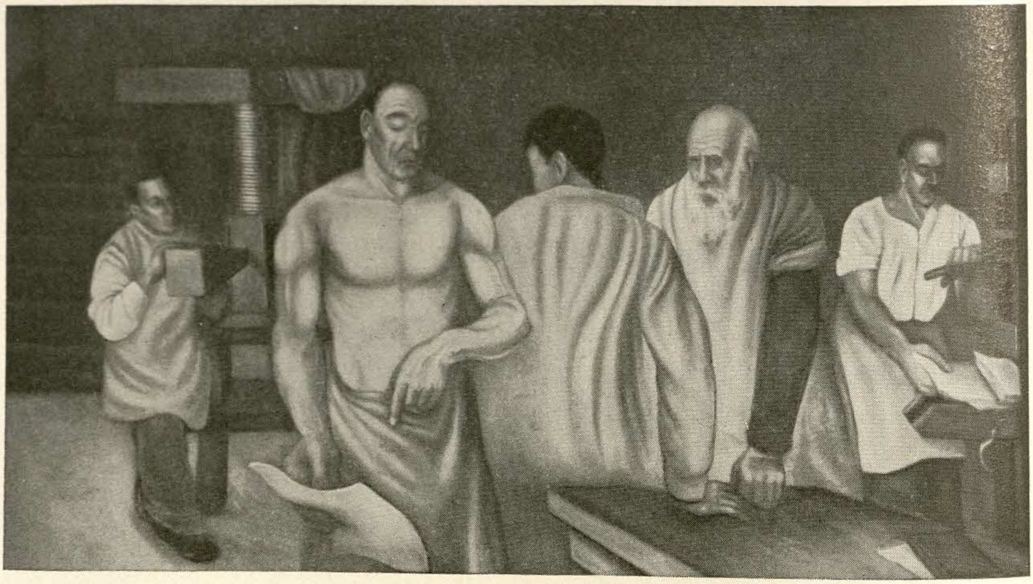
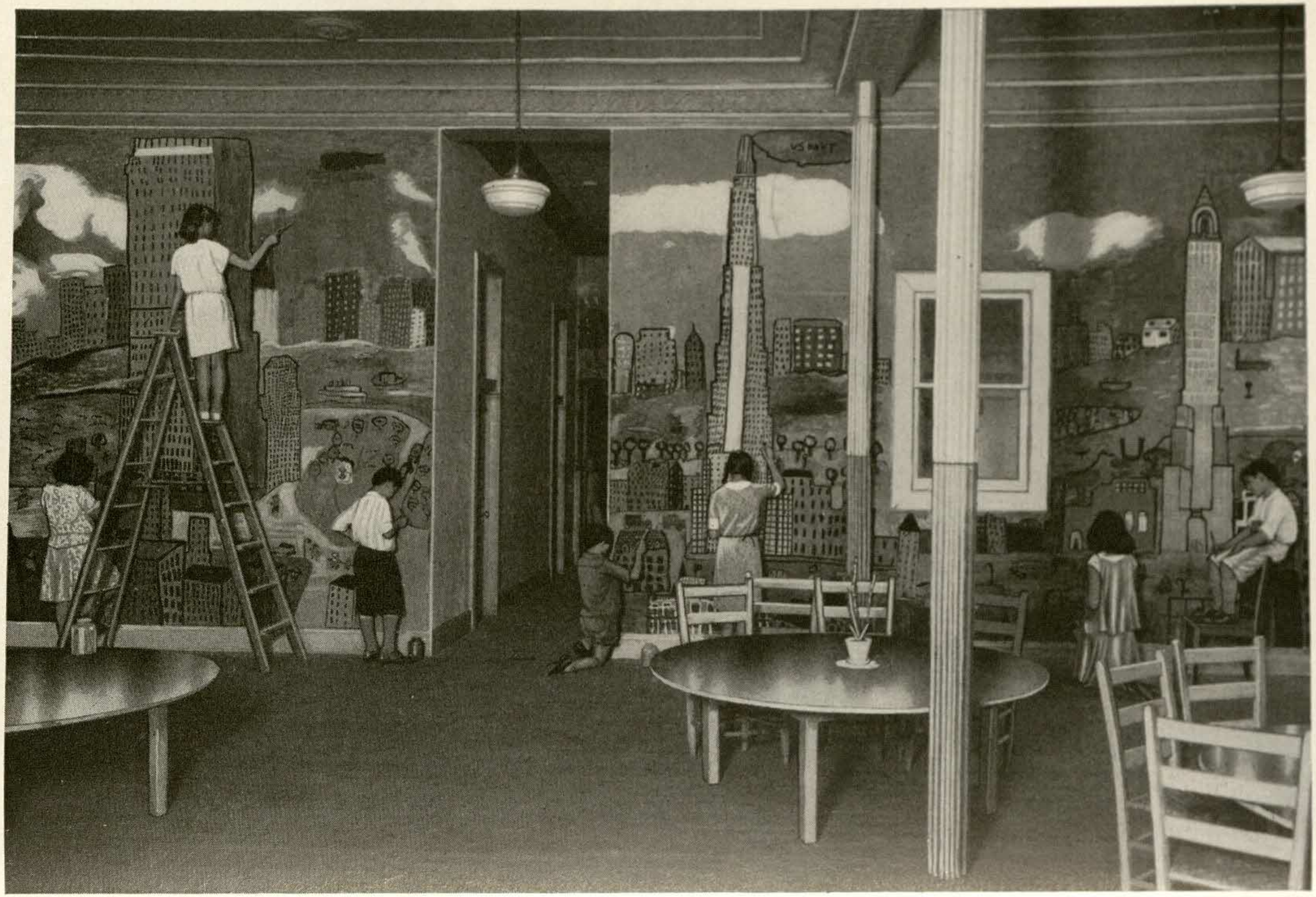


Plate XXIII—"The Invention of Printing"—A Mural for the School Library by a 16-Year-Old Boy. Mural Size, 6 by 12 Feet. Tempera Underpainting. Fieldston School, New York City.

then it was decided that a group of buildings, the Chrysler, the American Radiator, and several others should be arranged together to give the atmosphere of a city. Then the group worked in various spots of interest such as parks and architecture, at the same time endeavoring to give unity to the city pattern.

The individual designs were shifted about several times before the children were pleased with the arrangement. Since the designs had been made as separate pictures, the imagination had to play an important part in achieving the large composition. First the children considered scale, and decided that they would use the drawing of the Empire State as a unit of measurement. Then there was the problem of bringing the pictures together, which meant the fusion of patterns and the blending of ideas. A unity of design was achieved by keeping the drawing flat and eliminating perspective. After this the problem of color and technique arose. A simple color palette and technique that would give the mural balance in color and in light and dark were needed. The palette was limited to six colors, and the painting was done in flat areas with no attempt at shading but a surface pattern was produced through stippled strokes for trees and grass and in the repetition of architectural details such as windows and doors. Of course, this balance was difficult to strike at the outset, but through the watchfulness of the teacher and occasional group criticism, it was accomplished.

At this point it may be helpful to suggest that a group leader is an important factor and should be chosen by the group rather than by the teacher, because the group will work better under a leader of its own choice. In the project under discussion, the boy who made the composition of the Empire State was chosen for several reasons. In the words of one of the children, "He is the best artist and has made the finest drawing." He also had the quality of leadership and could be relied upon. Because he was modest and not aggressive, the children probably knew intuitively that they could work with him. After a staff of helpers had been selected to mix paint and construct



(*Photograph by A. Tennyson Beals*)

Plate XXIV—The Group Mural: "After the material was assimilated and discussed, a mural was planned with the Empire State Building, dirigible and all, as a center of interest"; Child Study Association under the Direction of the Author.

the scaffolding, the work was under way and proceeded with remarkable smoothness, each child rendering his own composition and weaving it into a general pattern.

It is important to guard against a practise that obtains in some schools, namely, that in the interests of producing good results a teacher will often permit an able draughtsman to execute the entire work, while the less capable children are permitted only to fill in areas or to do the tracing-work which requires little skill or responsibility. He may pursue this plan for two reasons: to give the appearance that a whole class is engaged in the project, or to give the average child the feeling that he is taking part in painting the mural. The results are apt to be disastrous, inasmuch as the less capable child acquires a sense of inferiority and injury from his menial position, while the abler child, feeling his superiority, looks down upon his less gifted companions. A child should have either a responsible part of the work, which he can call his own, or no part. If the teacher's idea is to create a distinguished work of art, he should select his best artists and allow them to work together and admit that the results belong to a chosen group of children, or he should permit all the children to work and accept the various achievements for the value they represent. The latter method seems preferable because it has greater educational value. It is important to emphasize that the development of the individuals engaged in work on the mural is more to be valued than brilliant results.

The second plan of operation in the group mural is the competitive method. The best design is selected by group vote and is used as the subject for the mural. Sometimes the choice is made by the teacher—a less desirable procedure than letting the class make the choice. However, the teacher as part of the group may have a vote, thereby helping to establish the basis for choice. But he should be conscientious about using his vote, since, because of his prestige and authority, he may swing the class to his way of thinking. After the choice has been made the rest of the class proceeds to execute it on a large scale. This method provides a good manipulative experience for all students, but it is not so satisfactory as the first method, since the children feel that the mural does not belong to them as a group, but to the child whose design they are rendering.

The Collective Mural

The collective mural is a mural worked out by a group of artists under a leader who plans and supervises the work. It is a method which has developed among professional mural painters in recent years. A group of artists, commissioned to render a mural, agree upon a composition and the style of creating it. Often one artist leads the group, choosing the technique and directing the composition. This procedure is similar to the medieval practice of master and apprentice, and is often used in making the collective mural. The artists usually regard the leader as their master and agree to learn from him. A few art schools in the country have been established on this basis, where students are taught the art of mural painting by helping the instructor in his work.

This method has several values for art education, but it must be used with great caution and sensitiveness. However, if the teacher can work with the students as one of them, and keep his own style and identity concealed, the method will probably prove to be very successful, but it will require skill and discretion. The danger is that the students are apt to be dominated by the teacher, especially if he has a strong personality and a definite style, and simply become satellites. If, however, the student is sufficiently developed to derive all that is of value from it, and can return to his own work without losing his individuality, it will prove very useful training. The benefit of this process is that the teacher learns to change from the status of teacher, critic, and observer of the child, to his partner in art. The teacher who can successfully make such an adjustment will remain flexible and be able to stimulate education in art.

The Mural Quality

Throughout the chapter we have used the term "mural" in its literal sense, that is, as a wall drawing. As educational material, we have considered only the qualities of size and breadth, of concept and workmanship. The aesthetic values that a mural comprises have not yet been considered, because they do not concern the lower educational level. It is, however, a fortunate coincidence that the work of young children has qualities characteristic of the mural, because they are in a very primitive sense, simple, direct, and flat in treatment and generally without perspective.

The older student, however, can study the characteristics peculiar to the mural and should keep them in mind not only while he is designing the mural, but throughout the process to its completion. Here we shall discuss only the most elementary characteristics of the mural.

First, mural painting should meet the requirement of a wall decoration, which is that it possess the integrity and simplicity of a flat wall. To accomplish this result the artist will avoid the use of pronounced perspective that tends to carry the observer into the wall, or of a great amount of modeling that causes the surface to undulate or bulge in places, and recede in others. No clever device to simulate realism should be employed; for example, natural scenes or false windows, which make the picture appear more like a stage curtain than a mural. The figures in the mural have the minimum of foreshortening and modeling, and the color should be unobtrusive but should harmonize with the background of the room or the building of which the mural is a part. While the young artist may find many exceptions to this rule in the works of the old or modern masters, he will do well to use this approach until he has gained the mural concept. He may then proceed as his power permits and his judgment dictates.

The youthful artist, who is planning mural decoration for a special location, should first study the architecture, the color, and design of the place. He will then plan his composition in relation to the background and make his design conform to its structures, taking into account the general architecture. He will not, for example, plan a vertical composition for a horizontal area, nor arrange a group of figures in a space that makes them seem crowded or crushed by the architecture. He will try to make his wall move horizontally or vertically, as the case may be, by causing his dominant lines to move in those directions, and will arrange his figures on the horizontal or the vertical plane. The beginning artist will find it simpler to use his figures in front and side views, and to avoid the exacting foreshortening which becomes exceedingly difficult when employed on the scale necessary for the mural. A study of Egyptian wall painting may be of great help in understanding the presentation of the flatness of the wall surface and the simplification of the human figure, but the student should try to avoid the conventionalities employed in this type of art.

If a wall seems too short or too low for a room, the artist may give it the appearance of greater length or height by allowing his dominating lines to emphasize its horizontal or vertical direction; if the wall is too long or too high, he can reduce the disproportion by illusion, using lines opposing the general direction of the wall or breaking the area into panels.

The color scheme of the mural will be determined by the color of the room, or of the architecture it is to decorate. The artist will select the main colors from the dominating colors of the background. Though they may be few in number, he can use other colors for contrast and variety as his judgment dictates, but they should of course be in harmony with the dominant colors.

The simple mural, painted in flat colors with emphasis on line and mass, can be handled even by young children. The mural expressing form is more difficult, and should be undertaken by the more mature student. At the beginning, the student can produce the quality of flatness in the mural and still show a sense of form by a suggestion of modeling, such as modeling an object along its edges and by blending the edges into a flat area toward the center. As the student gains skill, he will be able to extend his use of form and color to conform to the qualities characteristic of the mural.

Mural Processes and Their Materials

The mural processes and their materials have been adapted to meet the needs and abilities of every level of art experience. They range from the simple, economical paper mural to the complex and professional media such as the fresco. Most of the simple processes have been designed for school use and are adaptable to the lower school levels. The professional processes may be used to advantage in the secondary school.

The Paper Mural.—The simplest and most economical form of the mural is the paper mural, which is most successfully used with small children. Heavy wrapping paper (large sheets or roll paper) is fastened to the wall with thumbtacks or pins. Ordinary pins do not deface the plaster and can be driven into the wall with a tack hammer. Gummed paper tape is then pasted over the edges of the sheets, which either overlap or meet, and the original pins or thumbtacks can be removed, except along the top, sides, and bottom of the mural which hold it to the wall (Figure 18). Another way is to lay the sheets on the floor, paste them together with tape, and then raise the whole mural to the wall and fasten it in place. This method requires greater skill in handling than the first one, but the paper is put together more easily in this way.

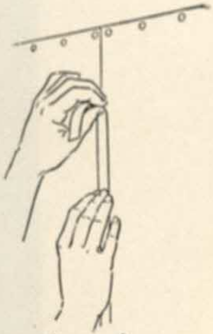
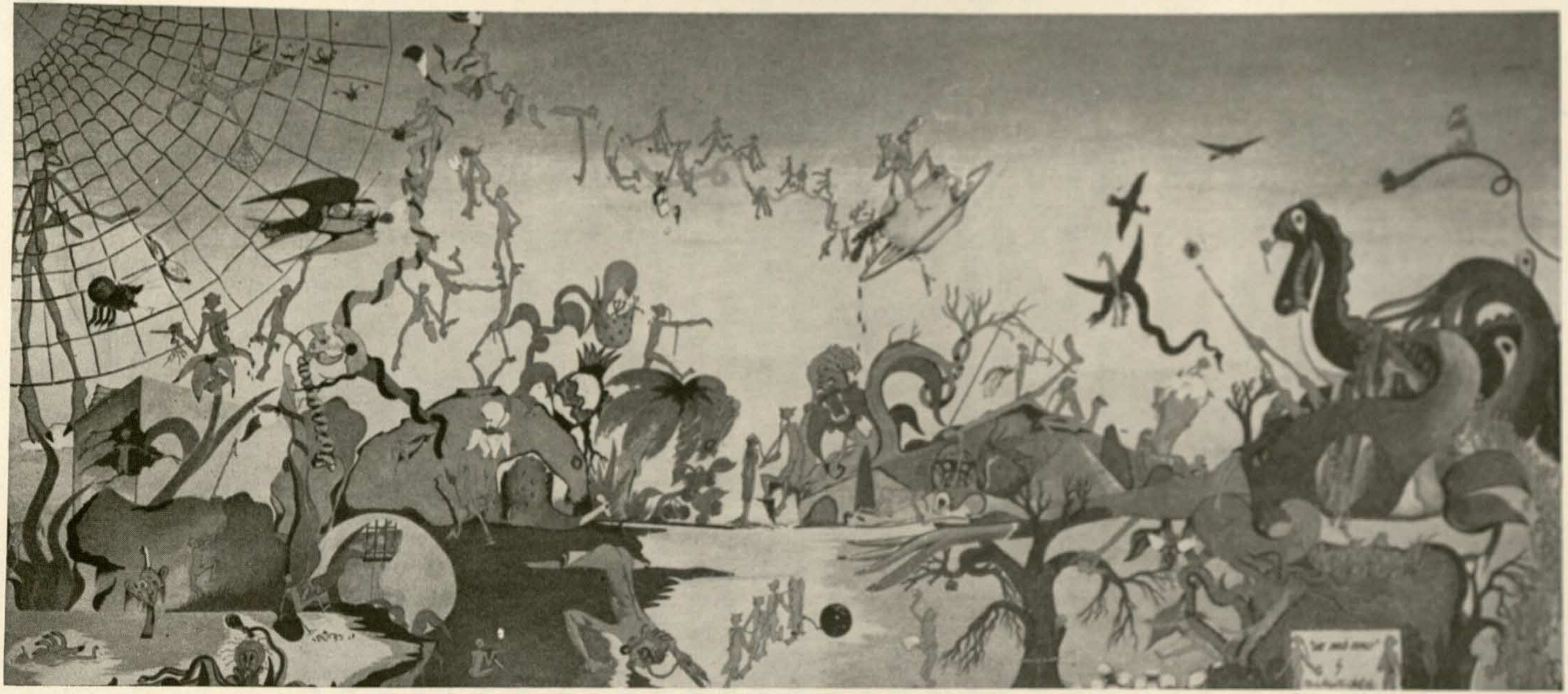


Figure 18

After the paper is placed the children can begin to lay in their drawing with chalk or charcoal. If desired, lines may be fixed with fixative, but this is not necessary when the opaque colors cover them. The painters can then begin, using bristle brushes of various sizes



(Photograph by Richard W. Hofmann)

Plate XXV—"A Fantasy"—A Mural by Two Boys, Robert, 16 Years Old, and Michael, 17 Years Old. Mural Size, 4 by 9½ Feet. Tempera on Wallboard. Rye High School, Rye, New York.

and tempera or poster colors. Camel's hair or sable brushes are not adequate, because they are too flexible and will not support the color or the stroke. It is often satisfactory simply to paint the edges of the forms, to use a decorative line treatment, or paint in an open technique so that the original color of the paper shows through. This method gives unity of color throughout the composition.

The Chalk Mural.—Another effective means for coloring the mural is to use colored chalks, which give brilliant and effective results. These chalks are economical if purchased by the gross. They are simple to apply and can be spread and rubbed into the paper with the fingers, a piece of absorbent cotton, or cloth. As chalks rub off easily, it is safest to spray them with white fixative. Each section of a panel should be sprayed as it is completed. The fixative is best applied by a spray gun, for almost complete saturation of the surface is necessary if the chalk is to adhere. Using both pastels and chalks will give a wider color range, but pastels used alone are too expensive to be practical.

Children's murals should not be permanent, but should remain on the walls as long as there is a need or interest in them, then others may be made to take their place. It should be possible to remove and store away the mural in a few minutes. The paper mural, therefore, is expedient because it is of a temporary nature and is easy to handle.

The Canvas Mural.—Canvas is a very practical and popular material for mural work rendered in oils. The cost of painter's canvas may be prohibitive, but decorator's canvas is sufficiently cheap to be afforded by most school budgets. It comes in six- and twelve-yard rolls, six to eight feet wide, prepared for use. Unprepared canvas or unbleached muslin can also be used and is very inexpensive, but must be prepared before using.[2] The canvas mural should be either stretched on a wooden frame, or tacked against the wall to make working convenient (Plate XXV). The composition is next laid in with charcoal, and the charcoal lines fixed so that they will not muddy the paint. Painting should begin with bristle brushes and oil paints. Inexpensive decorator's oil colors can be purchased in half-pound or one-pound tubes and should be used in place of the more expensive artist's oil colors. When the mural is completed it may be fastened in place, stretcher and all, or it may be removed from the stretcher and cemented to the wall so that it will seem to be part of it.

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[2] See Chapter 9, "The Child-Artist and His Materials," p. 233. Also for more detailed information refer to: Max Doerner, *The Materials of the Artist* (New York: Harcourt, Brace and Company, 1934), and A. P. Laurie, *The Painter's Methods and Materials* (Philadelphia: J. B. Lippincott Company, 1926).

The mural in oils can be executed by children from the sixth grade upwards if they are properly guided, but it is impractical to work in oils below this grade. Oil paints permit changes and reworking and are therefore advised for the older student who will wish to carry his painting farther than the young child does. The canvas mural can also be rendered in water paints, but the fabric should first be sized with glue, and a priming coat of white water color such as kalsomine or muresco colors should be used instead of the oil ground. The surface should next receive a coat of shellac. The artist can then proceed with bristle brushes and poster colors, applying rather thick paint and using the same technique as he would employ when painting with oils.

The Fresco Mural.—Fresco is the most interesting and challenging of the many methods of mural painting. It was the chief medium of the Italian painters of the Renaissance. In modern times, however, we owe the revival and mastery of the fresco methods to Mexican mural painters, especially to Diego Rivera, José Clemente Orozco, and David Siqueiros. The youthful artist should make the effort to see the work of these masters in order to fully appreciate the qualities and beauty of the fresco. Until the modern revival of the fresco, one had to travel abroad to see fresco at its best, but today we have many fine examples within easy reach because Rivera and Orozco have been prolific in the production of frescos, both in the United States and in Mexico. They have also been instrumental in stimulating and teaching many young artists who are carrying on the tradition and adding excellent examples to fresco painting.

Fresco painting and mural painting in general have received great impetus through the government projects, particularly those done under the Federal Art Project and the Treasury Department. One need not travel far to see examples of fresco painting.[3]

The True Fresco (Fresco Buono)

The true fresco, *fresco buono,* is painting in wet plaster in contrast to dry fresco, *fresco secco,* which is painting on dry plaster. The reference already made to fresco painting and the examples given in the footnote relate to true fresco. In fresco (true fresco) lime acts as a binding medium. As the water evaporates from the wet plaster it simultaneously absorbs carbonic gas from the air. A glassy skin of crystalline carbonate of lime is formed on the surface of the mural. This skin incorporates the colors.

The fresco is a complex but interesting process which, to be executed successfully, requires care, skill, and concentration. There are several preliminary steps necessary before undertaking the actual work of preparing the wall and painting on the plaster. The greater

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[3] The following is a suggestive list of examples of true fresco painting which may be seen in the United States and Mexico:

José Clemente Orozco: Pomona College, Claremont, California; New School for Social Research, New York City; Dartmouth College, Hanover, New Hampshire; Ministry of Education, Mexico City, D. F., Mexico; Government Building, Guadalahara, Mexico.

Diego Rivera: Detroit Museum of Art, Detroit, Michigan; Ministry of Education, Mexico City, D. F., Mexico; City Hall, Cuernavaca, Mexico; National Preparatory School, Mexico City, D. F., Mexico; Agricultural School, Chapingo, Mexico.

David Siqueiros: National Preparatory School, Mexico City, D. F., Mexico.

Jean Charlot: National Preparatory School, Mexico City, D. F., Mexico.

Paul O'Higgins and Mercado Rodriguez: Civic Center, Mexico City, D. F., Mexico.

Marion Greenwood: Civic Center, Mexico City, D. F., Mexico; University of San Hidalgo, Moralia, Michoacan, Mexico; Museum of Moralia, Michoacan, Mexico; Community Building, Red Hook Houses, Brooklyn, New York.

Ryah Ludens: Museum of Moralia, Michoacan, Mexico; Bellevue Hospital, New York City.

Luis Arenal and Emilio Amero: Bellevue Hospital, New York City.

George Biddle: Department of Justice Building, Washington, D. C.

Henry Varnum Poor: Department of Justice Building, Washington, D. C.

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precaution the young artist takes in these preliminary steps, the more he will be assured of success.

The Design.—The first step in planning a mural is the subject, or theme. This subject may be an idea represented pictorially, or a decorative or abstract design. Most murals are of the pictorial type. The subject for such murals may be suggested by the use of the building which the mural is to decorate, such as historical subjects for an historical museum, or by some current interest, such as modern games for a recreation center. The design is of prime importance in the making of any mural, and therefore the problem of designing discussed earlier in the chapter should be reviewed by the young artist when planning his fresco. He should first make small preliminary sketches to scale for the wall he intends to decorate. A scale of one inch to a foot is a convenient size to work with. It is advisable to work these first sketches in black and white and then in color. Some artists make separate preliminary sketches in line, dark and light, and color, but such practices are a matter of individual choice, and may be left to the discretion of the artist.

The feeling for the architectural space, and mural or wall composition, cannot be over-stressed when making the preliminary design. The beginning mural artist should in particular bear this fact in mind, otherwise he will simply make an enlarged easel painting. He should not only learn to use the tools of the architect, such as the scale rule and square, and to read blueprints if necessary, but he should especially try to acquire the architect's feeling for the architectonic and plastic elements of design both in regard to the building and the mural that is to decorate it. It is also helpful to build a scale model of the room that the mural is to occupy, and to make a color sketch and set it in place so that the student can see how his mural will look in its setting. This preparation may prevent many errors and difficulties in the finished work, and is especially helpful in the making of a fresco where changes are more difficult and less possible than in the other types of mural painting.

The Cartoons.—After the preliminary sketches are made, the artist makes his cartoon. The cartoon is a drawing, the full scale of the mural, made on heavy drawing paper. Architect's detail paper or heavy wrapping paper is excellent for this purpose. It can be made in line or in black and white values. At this point the artist may find it necessary to make separate studies of objects or scenes, for many of the details which were acceptable in the small scale need re-designing and drawing when enlarged. This practice provides an excellent opportunity for the student to acquire added power and experience in designing and drawing. When the cartoon is complete a tracing must be made on architect's tracing paper. If the mural is very large, the tracing (and the cartoon as well) may be made in sections. While most of these preliminary steps would be helpful in the making of any mural, they are more or less indispensable in fresco.

Preparing the Wall.—The first step in making the fresco is the preparation of the wall. A brick, hollow tile, or stone wall is excellent for fresco. Wood lath and metal lath walls may also do, but they run the risk of cracking, falling off, or drying too rapidly. A damp wall such as a cellar wall where moisture seeps through from the outside is not good, for the plaster would never dry or adhere. If there are any large holes in the wall, they should be filled with porous brick to even off the surface. If the wall is already covered with plaster, such as an old wall, the plaster must be removed to the base. A smooth wall must be roughened by pricking holes into it so that the plaster will stick. Before applying the plaster the wall should be thoroughly wet. It is well to wet the wall repeatedly for several days before applying the plaster. Applying water with a garden hose is best for the purpose, but careful sponging can be substituted. The wall is now ready for the first coat of plaster.

The First Coat (or scratch coat).—The first, or scratch, coat is made of one part lime, and 3 parts coarse sand. The lime (hydrated lime is good) should be slaked one month before using, but the longer it is slaked the better. White lime is used instead of grey lime. A quantity may be placed in a tub or plasterer's frame, water run into it, and mixed thoroughly with a hoe. It should be stirred every day to make it fine and silky. When ready to use, the extra water is poured off and the lime may be sifted through a net to remove lumps or unslaked particles. The sand used must be clean pit sand and free from dirt or mud. A dry pointed sand (that is, quartz sand), not a round sand, should be used. The ordinary building sand is not suitable.[4]

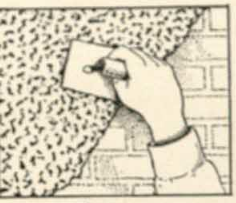
Figure 19

Slaked lime and sand should then be mixed together without the addition of water and promptly well worked together, then water may be added to make it workable. The first coat should be thrown on the wall vigorously and spread out, but never smoothed, to about the thickness of one inch. It should be laid on from the bottom to the top with a trowel or float, but if it becomes smooth, it should be roughened or scraped with a trowel (Figure 19).

The tools used in laying plaster are the float or plane, the trowel, and the mortarboard (Figure 20). The mortarboard serves as the plasterer's palette upon which the plaster is held for use. The float is a flat metal or wooden tool with a bridge handle to use in smoothing the plaster, and the trowel, a pointed metal tool, is used to spread plaster, fill crevices, and to cut away the unused plaster surface.

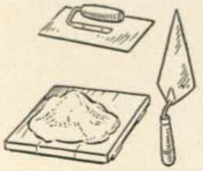
Figure 20

This coat is allowed to dry, or set, for one week. The cartoon may now be laid over the wall and the design pounced through with chalk, the lines having been previously perforated with a roulette so that the chalk may go through. There is a simpler way of making the cartoon which seems desirable for the beginner. It is a method used extensively by the Mexican painters. The design is drawn in full size on the first coat in outline, using red paint, charcoal, or crayon, and then traced off on tracing paper. The tracing is used for marking the design on the final coat of each section until the mural is finished. Either method may be used, but the cartoon should at this point appear in line on the first coat.

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[4] In New York City sand for fresco may be procured from Whitehead Bros.

The Second Coat (or brown coat).—The second, or brown, coat is mixed with two parts medium coarse sand or marble powder (medium grade) and one part lime (Figure 21).

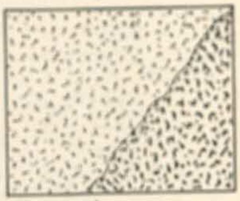
Figure 21

The Third Coat.—The third coat is mixed with one part lime to one part marble powder (very fine grade, also called marble meal). Fine sand may be used in place of marble powder [5] (Figure 22). The wall must be thoroughly wet before the second and third coats are applied. Only the area which can be painted in a day should be covered with the second and third coats. The third coat is laid immediately over the second and smoothed with the plane or float and trowel. The part not painted on should be cut away with the trowel. The plaster should not be painted on too soon, for the color will not take. The artist may continue to paint as long as the plaster will absorb the color, approximately eight hours in our temperate climate, but it varies with the weather, temperature, and climate. On damp days the time for painting will be longer, and on dry days shorter, according to the length of time it takes the plaster to dry. The painter can feel when the plaster is too dry, for his brush begins to pull, or when he rubs his finger over the surface the color comes off.

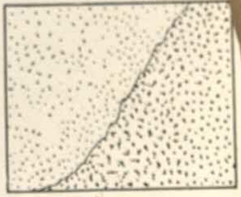
Figure 22

The advantage of drawing the composition on the first coat can now be seen, because the artist can relate his color and form much more easily, and as the finished sections cover up the wall, and as he cuts around each day's work and takes off the dry plaster, he has the continuing outline to guide him. The tracing comes into constant use, for as the second and third coats are applied they cover the drawing, the tracing being placed over the area and the covered part retraced. The blunt end of a paint brush may be used for tracing. It makes an incised line easy to follow. If a large area is being covered with plaster the tracing will have to be referred to again and again.

Preparing the Colors.—The preparation of the paints is a very simple process. Powdered dry color is mixed with water [5a] on a marble slab with a marble grinder until a smooth, creamy paste is obtained (Figure 23). They may also be ground in a mortar with a pestle. The paste should then be placed in a glass jar and covered with a little water. The colors should be ground separately and put in separate jars which are covered to avoid drying. Any colors that dry out must be reground in water. When the student is ready to paint, a small amount of each color to be used should be laid on the palette (an ordinary dish will do) and used like water color with soft brushes, such as camel's hair or sable brushes.

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[5] Three grades of plaster may be purchased in slaked and mixed forms.

[5a] Distilled water is recommended when the ordinary water supply contains impurities or a large mineral content.

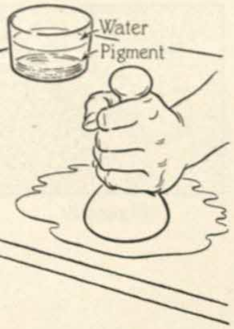

Figure 23

Unlike most of the other painting media, fresco has no glue or other vehicle for holding the color in place. The paints, mixed with water, are applied on the wet plaster and are incorporated into the wall through the conversion of the line into calcium carbonate by the carbonic gas in the air.

The Color Palette.—The following color palette is suggested. Any color can be mixed with another because they are earth colors, or because they have been treated with lime.[6]

1. Yellow Ochre
2. Raw Sienna
3. Raw Umber
4. Pozzuoli Red (Rose Earth)
5. Burnt Sienna
6. Oxide of Iron
7. Indian Red
8. Green Earth (Terre Vert)
9. Oxide of Chromium (transparent and mat)
10. Cobalt Blue
11. Ultramarine (Guimet Blue)
12. Vine Black (Negro de Vigne)

The quantity suggested for the beginner is 100 grams of the more expensive colors, such as the cobalt, and one-half kilo of the earths and black. Only the finest powdered colors should be used. Ten dollars worth of these colors would outfit a group of fifty or more students for at least a year.

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[6] Diego Rivera uses the following colors: yellow ochre, golden (middle) ochre, dark ochre, raw sienna, Pozzuoli red, red ochre, Venetian red, almagra morado, burnt sienna, transparent oxide of chromium, cobalt blue, vine black. He avoids the use of ultramarine.

Painting the Fresco.—When the beginner paints on the wet plaster he is apt to press too hard on the surface, in which case he will pick up the plaster with his brush, and not only ruin the smooth surface, but the color will become milky and whitish. Only after practice, and after he gets the feel of it, will he master this difficulty completely. He should also bear in mind that the fresco appears darker the second day, but lighter the third day, and continues to become lighter as it dries. In three days one will observe this tendency in the sections that have dried. The beginner should therefore paint his colors much darker than he wishes them to be finally. Practice and experience will show that certain colors dry more quickly than others: the blues, for instance, must be applied while the plaster is quite wet as they do not sink in as quickly as the earth colors and if applied too late they will rub off. The wall should be tested to see that it is ready for tracing on the design and for painting. If the plaster does not give under the pressure of the finger, but may be easily dented, the tracing (or pouncing) may be done. Likewise, if the surface is firm enough for the brush strokes to be made on it without picking up the lime, it is ready for painting. As was said before, milky color results from painting on plaster that is too wet, yet the plaster must be wet enough to absorb the color particles so that when the water evaporates the pigment becomes an integral part of the surface.

In painting the fresco the artist begins directly on the wall, guided by the incised line made by tracing through the cartoon, or by the chalk line if the design has been pounced. As has been said, each area must be finished completely before a new section of plaster is laid. Some Mexican artists proceed by first painting the object appearing in the space in values of black and grey, and then washing over it with color. This process gives both value and quality of color. Other artists, however, maintain that this process destroys the clearness of the color, and recommend mixing the various shades of a color and shading in with each color from light to dark. For example, if a vase is being painted in three values of blue, it would first be painted in light blue, then a medium blue would be used for the intermediate shades, and finally a dark blue would be used for the dark values (Figures 24-26). The artist, however, can try both methods and decide for himself which he finds more successful.

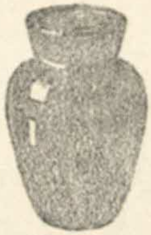
Figure 24

The transparent method (Mexican method) or the opaque method (used largely by the Italians) may be used. In the transparent method the white surface of the wall functions as the light in colors, or as white, just as the white paper does in transparent water color. A dead white should be avoided when possible as it will not harmonize with the rest of the painting, but a white effect may be achieved and still harmonize, by painting a light tone of color over it. Care should be taken in painting the darks so as not to load the surface with color. In the opaque method white lime is mixed with the colors giving a solid opaque effect like oil colors, but this material is difficult to handle and overloading may easily result. The beginner is advised to use the first method. Both methods may be used with satisfactory results on the same fresco if the artist wishes to do so and has the necessary experience. Orozco has employed both methods with magnificent results in his fresco at Dartmouth College.[7]

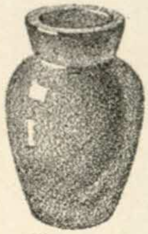
Figure 25

The student should begin to paint at the top, at either the right or left edge, and work across, not up and down, as the unavoidable splashing of the paint will ruin the mural. In a large composition, the painting at the top should be simple and bold if the form and color is to be conveyed to the observer who will stand on the ground, while the painting near the eye level should be more finished and detailed, for it will be closer to the observer. While the plaster is wet, corrections in drawing and painting may be made easily by laying a thin film of the finishing coat and repainting. However, after the plaster is dry corrections can be made only by cutting away the surface and laying a new finishing coat and repainting. Unlike other forms of painting, which are re-worked entirely and finished as a whole, the fresco is finished by sections. To maintain a sense of unity in the work, therefore, the artist must do his best to relate each section in color, technique, and drawing. The small preliminary sketches are very helpful to keep in view, especially for the student, as they will help him to keep the picture as a whole in mind. The beginner might otherwise lose the important balance of mass, light and dark, and color when working close to a large form.

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[7] The following works will give further information on the techniques of fresco painting: Max Doerner, *The Materials of the Artist* (New York: Harcourt, Brace and Company, 1934), A. P. Laurie, *The Painter's Methods and Materials* (Philadelphia: J. B. Lippincott Company, 1926). Hilaire Hiler, *The Painter's Pocket Book of Methods and Materials* (London: Faber and Faber, Ltd., 1937), C. J. Herringham, *The Book of Art of Cennino Cennini* (London: C. Allen, 1899). Ralph Mayer, *The Artist's Handbook* (New York: Viking Press, 1940).

Figure 26

As the various sections of the plaster dry, a seam may be detected where they join. The artist, therefore, will plan to have the seam coincide with the edge of a form, instead of cutting directly across it. For example, in painting a head the artist will allow the seam to follow the outline of the face and hair (Figure 27). This operation can be easily managed if the artist plans in advance to complete a certain form or figure in one day instead of trying to match it the next day. The seam can also be avoided by cutting back the finished area each day, thus allowing the new area to overlap the preceding one. However, it is advisable for the beginner to follow the method of completing a section at a time.

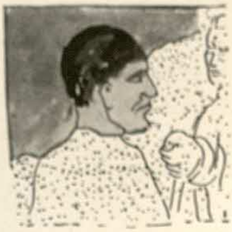

Figure 27

Fresco painting is a thrilling experience, and the true medium for mural painting, since it becomes a permanent part of the wall. The famous painting by Leonardo da Vinci, "The Last Supper," is a fresco painted on the wall of the refectory of a convent in Milan. If a new fresco is to be painted in place of an old one, the surface of the wall must be cut entirely away and a second surface laid in the same manner as the first. The fresco has a luminous water-color quality unmatched by other media of painting. Though it is a longer process and involves many more steps than other methods of painting, it is all the more exciting because each step is an adventure and each new experience adds to the satisfaction.

Fresco Panels.—Though a wall is the most desirable background for fresco work, those who do not have walls available will find satisfactory substitutes in fresco panels. These panels may be made by various methods, from simple to complex, depending on the desire of the artist and the materials at his disposal. A complex and professional method of construction is described by A. Sanches Flores, Technical Assistant to Diego Rivera. He tells how and why Rivera used these panels in making the frescoes for the New Workers' School in New York City.

"The case of the New Workers' School presented a completely different problem. Since the school does not own the building which it occupies at present, it may at any time be forced to make a change. Therefore, as a solution to this problem we were led to the construction of removable panels. These removable panels cannot, of course, be compared in weight to easel paintings, which can be carried everywhere and, if one wishes, piled up in any place. But, considering that they are fresco paintings, they are extremely light. Two men can easily carry them. In regard to their flexibility, there need be no fear of cracks as a result of the vibrations and shocks to which they are necessarily subject in transportation. A panel five feet by five resists a pressure of 100 to 150 pounds at its center, giving a deflection of 1 to 1½ inches without the appearance of any cracks after the pressure is released. The weight of the panel itself is approximately 150 to 200 pounds.

"These panels are constructed in the following manner: On a skeleton of wood a composition board is placed and held firmly by galvanized screws and washers. On this board is spread a coat consisting of a mixture of cement, goat's hair, marble dust, and lime. Before this coat dries a wire mesh is sunk halfway into the fresh cement plaster. Galvanized staples are nailed in every six inches over the entire surface of the wire mesh. The panel is then left to dry. This drying requires a week, more or less, in the summer time. Once the panel is dry it is ready to receive the second coat, or brown coat, which consists of marble dust and lime, and is applied directly on the cement, which has first been thoroughly wet. The panel is then left again to dry a week, more or less, according to the atmospheric conditions. When the second coat is dry, the panel is ready to receive the final coat, or that is to say, the one on which the painting is done. This last coat consists of one part of fine marble dust to an equal amount of lime."

These panels are especially durable and will last indefinitely. But for school purposes, and for experimentation, simpler methods may be used, such as laying the first coat without the addition of goat's hair, on a backing of cellotex or pressed wood board and sinking the wire mesh into it, omitting the staples. The second and third coats may then be added. The frame, or skeleton of wood, too, may be omitted. One can also try applying the two finishing coats over a very thin layer of the first coat, which is left very rough, with no other preparation. This process will work if the panel is quite small and used mainly for experimental purposes. Some painters use just the two final coats on the wet panel.

Dry Fresco (Fresco Secco).—Dry fresco painting is painting on a dry instead of a wet ground. In dry fresco many technical combinations and modifications are practised that differ from those applicable to true fresco. It is a much simpler process than true fresco since the plaster coats are all put on at one time, and the processes of waiting for the plaster to dry and the careful joining of the sections are omitted. Dry fresco may also be done on an old plaster wall or on a fresh plaster wall newly laid. Of course, the wall should be a good one, that is, it should have no moisture seepage from within, all holes and cracks should be opened, watered, and filled in with fresco ground, but not with gypsum because the gypsum will continue to "work" and the color put on it will fall off. Old, dry plaster should be made rough with a steel brush to take off the film of carbonate of lime, because the color will not adhere to it. The wall is well moistened and a lime wash laid over it. The artist may paint into the wet lime wash or wait until it dries.

Because the lime is already dry and set in dry fresco, a medium is necessary to cause the pigment to adhere. Whereas in true fresco the artist paints with only water and paint, in dry fresco he uses a binder. Several media or binders may be used, egg, lime, casein, and so on. One may paint on thoroughly moistened lime plaster with colors mixed with lime.

Figure 28

Casein,[8] which must be prepared fresh each time, is the material prescribed for dry fresco painting. Casein, if ground with about one-fifth its volume of slaked lime, becomes liquid. It can then be easily emulsified and thinned with water. This emulsion is mixed with the pigment in painting. Casein must be diluted with about three to five parts, or more, of water.

Dry fresco may be painted with egg yolk. The colors are ground with a little water mixed with an equal part of yolk of egg to a stiff consistency. A little lime is added to the colors. This mixture forms the pigment with which to paint. Sometimes the wall is covered with a wash of egg yolk which is applied with a sponge. A little color may be added to give it tone.

Dry Fresco Panels.—As in the case of the true fresco, panels may be used for dry fresco when walls are not available. These panels need not be made as intricately as those for true fresco because only the finishing coat is necessary for painting. For experimentation one may spread one coat of lime plaster about one-quarter of an inch thick over a moistened building board like cellotex, which is rough and ready to catch the plaster. When it is dry he can paint on it with any of the dry fresco media he chooses.

A simple technique, devised by the author for experiencing the dry fresco painting, is to cover any building board which will not warp, such as cellotex or pressed wood, with a thin coat of prepared plaster, such as Textone or any other make (Figure 28), and then to paint on it with any medium that is not affected by the action of gypsum or caustic lime, such as tempera colors or poster colors. This process furnishes a very convenient and economical way of making a dry fresco, but of course it should not be compared to the older methods of dry fresco.

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[8] Casein is the curd matter of milk.

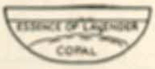

Figure 29

Encaustic Painting

Encaustic painting is another mural medium which has been revived by the Mexican masters. It was used by the Coptic painters in Greece and Egypt. It has a rich, luminous quality and is most enduring. The excellent condition of the Coptic paintings even to this day is attributed to the use of the encaustic medium.[9] The advantages of encaustic are not only its brilliance and permanence, but also its applicability to canvas, metal, and stone. Diego Rivera's murals in the National Preparatory School in Mexico City are done in encaustic on concrete.

While various descriptions of the medium can be found, the Mexican process seems most simple and effective. There are two types of encaustic painting; burnt encaustic and cold encaustic.

Burnt encaustic is prepared as follows: Powdered color (as used in the fresco) is ground with a gluten, made of beeswax and copal gum, dissolved in essence of lavender. Gasoline may be used instead of essence of lavender, although it is not as satisfactory because it dries out the color, but it is much cheaper. Equal parts of wax and copal are shaved and pulverized (that is, the wax is shaved and the copal pulverized) in separate dishes (Figures 29-30), and each dish is just covered with essence of lavender.

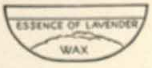

Figure 30

Using a double-boiler process (placing the dish in boiling water and not directly over the flame) each dish is heated separately until the contents have melted and mixed with the essence of lavender. The contents of both dishes are then poured into one container. When the mixture cools, a smooth, glossy gluten will result. Then each powdered color is ground with some of the gluten and sealed in air-tight containers where it can be kept indefinitely.

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[9] Some authorities dispute this point on the ground that the clear atmosphere of Greece and Egypt, rather than the media used, has preserved these paintings.

A palette of colors similar to that used with the fresco can be used, but should be augmented with the following colors:

1. Cadmium Yellows
2. Cadmium Reds
3. Strontium Yellow
4. Naples Yellow
5. Cobalt Greens
6. Lakes
7. Zinc White
8. Malachite Green

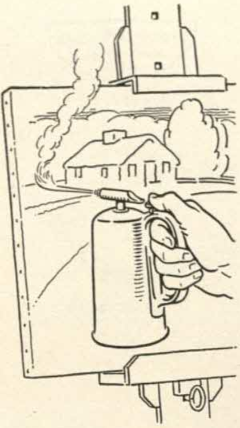


Figure 31

When painting, the medium is applied with a brush as in oil painting, but during the process the pigment is burnt in and enameled with a blow torch. That is, a small portion of the mural is painted and then burnt in, building up a thick, transparent medium (Figure 31). The beauty and quality of encaustic is beyond description. The reader will either have to experience the process for himself, or view paintings done in encaustic to be able to appreciate their beauty.

Cold encaustic is made similarly to burnt encaustic, but no burning is employed. The artist paints in his surface with colors as he does in oils, but while the result resembles oil painting, it has much greater brilliancy. Encaustic may be used in easel paintings as well as in murals, and should help to increase the range of materials and experience in both easel and mural painting.

Chapter Four

The Child as Sculptor

Children Are Naturally Endowed Sculptors

The urge to model and build in three-dimensional materials is as strong in most children as the will to draw or paint. However, expression of this urge varies with the age and type of child, and the technique of developing it will vary with the individual and the environment surrounding him (Plate XXVI). Under favorable conditions, even so-called average children are found to be amazing little artists who often produce results that arouse the envy of professional artists. It is, therefore, important to understand the changing nature of the child at various age levels, and to study the conditions that influence it.

Modeling and Sculpture—A Technical Distinction

There is a distinction between these two arts which is not always made in considering them. Modeling is the process of building up a conceived form, while sculpture or carving is the process of cutting down to a form. The one is additive, the other subtractive. Sculpture is frequently used as a general term to designate the products of both processes. Since modeling is a much simpler process and the form can be changed and rebuilt without loss or destruction, it would naturally precede the experience in sculpture. Since in sculpture, once a part is cut away from the block it cannot be restored, the experience requires a definite amount of skill and confidence to bring satisfaction.

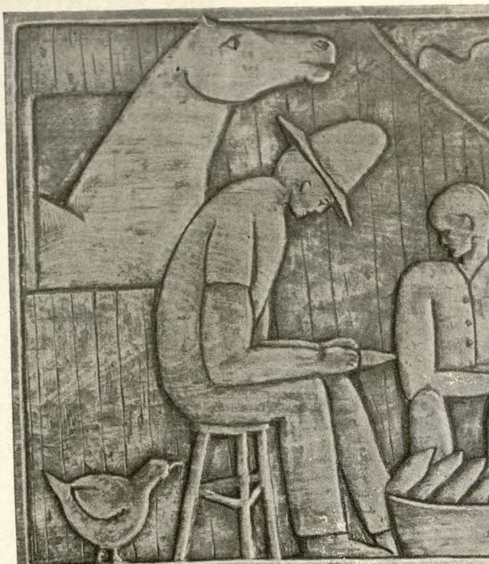


Plate XXVI

Carving by a Tenth Grade Boy Fieldston School

Modeling—Methods, Subject Matter, Materials

In the primary grades children show an intense interest in plastic expression. Little fingers are beginning to develop power and skill to produce the many images of fertile young minds. Their output is tremendous; often a child will model as many as a dozen pieces at one sitting. That children have much in common with the primitive artist, is revealed by their technique, imagination, and sense of design. Realism or accuracy does not trouble them, and an approximate likeness of the object represented easily satisfies their aspiration. Their sense of design is innate and the teaching of design, for its own sake is futile if not impossible at this stage. The best the teacher can do is to give the child freedom and encouragement in expressing his ideas and impressions in order that he may derive for himself the full satisfaction and benefit to be had from plastic expression. Although the teacher may be unable to teach the child design in any direct or conscious sense, he can help him to be sensitive to design by training him to observe simple line rhythm or forms in the animals, people, or things which the child portrays.

For example, he can contrast the thin vertical lines of the ostrich with the flat horizontal lines of the crocodile, or the graceful curved form of the swan with the bulky solid shape of the rhinoceros. Of course, the teacher must avoid technical terms, and talk only in the child's simple but vivid language. The animals at the zoo and pets at home or at school offer excellent material for observation. Experience is the best teacher, therefore working in a medium, or actual observation of living forms, will be far more fruitful as a process of learning than any discussion of media or design, or any formal problems which the teacher might present. If children have a pet, they will derive some excellent ideas from watching it. Aided by a good sense of feeling and the power of suggestion, they can represent activity or repose very skillfully. Young children are not at all literal, hence they do not attempt to make realistic representations; rather they suggest forms and motion naturally. In this respect they again resemble the primitive artist, but their sense of design acts subconsciously while the primitive artist probably must consciously work for simplicity and suggestion.

While children in the primary grades have a great love for the plastic medium and respond to it naturally, their sense of form is limited in its range. That is, the child sees only mass or bulk and the general shape, and does not perceive variations within a mass, or the subtle changes of contour. He therefore gets an approximate sense of form by "blocking out" his shapes in a spontaneous and rapid manner. From that point on his sense of design may be regarded as two-dimensional rather than three-dimensional. This condition may be recognized by his method of working, for as soon as he suggests the large form in the round, he begins playing with the surface, drawing details with scratched lines. Even when he attempts to express form in details, as in the facial features, he reveals this linear vision; for he represents a nose or a mouth with a string of clay, or he may twist the string of clay into a circle with a pellet of clay in the center to represent an eye, in the same way that he symbolizes a nose, mouth, or an eye with a brush or pencil in his two dimensional work. This example is not intended to suggest that young children should not be encouraged to work in the round, but merely to indicate their limitations and simple vision, and to help the teacher to understand that the child should not be forced beyond his ability to perceive.

Children in the primary grades have a tremendous store of energy and interest, but their span of concentration is brief. They learn through extensive, rather than intensive, experience. They work spontaneously and from inspiration. As a result, their production is tremendous, and they will occasionally turn out a piece of work that has a spark of genius in it. The subject matter deals mainly with people and animals. The people often represent actual persons in their own experience, and the animals include both wild animals which they observe at the zoo, the circus, or in their books and toys, and the more familiar pets found in the household. Dogs, cats, rabbits, birds, horses, elephants, giraffes, bears—all are included among their subjects. Everything they read, see, or hear may come in for expression. They often weave fascinating stories about their subjects as they work, for all these have a definite character in their world of fancy. They work on both the large and the small scale, making bold and spontaneous pieces at one time, and tiny, detailed objects at another. Small things have a great appeal for children—babies, animals and their young, eggs in baskets—and they work with infinite care and caressing fingers the structure and details of their miniature sculpture, adding tiny eyes, tails, and ears with delicate touches.

Because young children produce a large quantity of work, their efforts are often taken casually and allowed to crumble or are deliberately destroyed. Such an attitude brings grief and disappointment to the youngster who has worked so earnestly and lovingly upon an object. It is a pitiful sight to watch a child trying to put together one of his little creatures that has fallen to pieces. Of course, it is impossible to keep all the work that children do, but if the teacher preserves their most successful pieces, they may establish a standard of workmanship and achievement for themselves. That is, if the child can realize why a special piece of work is good, and can learn to recognize what has gone into its making, he will gain the power of judgment and self-criticism which is in itself an invaluable asset.

The destruction of children's work is not always the teacher's fault. Not all schools can afford to own and operate a kiln, and young children are often unable to master the proper technique of working in clay, so that their work may crumble before it is fired. The little pellets and strings of clay which children apply for eyes and ears are especially fragile, and unless properly attached, they drop off. If the pieces are to be fired, the child can be taught to apply slip to these delicate details before he puts them in place.[1] When facilities for firing are not available, the pieces can be painted and shellacked after

[1] For the making of slip see: Chapter Five, "The Child as Potter."

the clay is thoroughly dry. Mixing dry color in the shellac gives an interesting effect in monochrome. Unfired pieces will last only if the figure is compact and solid, with no fragile parts and few projecting forms. Older children can be taught to conform to this requirement, but it is unwise to get small children to do it, as it may tend to limit or formalize their work. There are, however, on the market self-hardening and cohesive clays which need no firing, and adhere with the slightest contact. When firing is impractical these clays should be used in the work with young children so that the little pellets, the eyes and ears, put on by small unskilled fingers will not drop off once they are in place. There are also small kilns which can be economically and easily operated by the teacher in an average classroom, but the work is limited in size to about two by three inches at the base and two inches in height.

Since children regard the finished product as the reward of their efforts, permanence is an important factor in their art work. For this reason, modeling wax is not as suitable as clay, because it is impermanent unless cast into another medium such as plaster or stone. It is useful, however, for work-models from which carvings are to be made, or for studies which are to be torn down after the experience has been derived. There are both pottery and modeling clays, but the pottery clay will serve for modeling. Pottery clay may be used for fired or unfired pieces and for work that is to be cast in plaster or any similar material. Modeling wax such as plasteline is ideal for making objects that are to be cast, but it is not wise to use it with children, particularly the very young, because it is stubborn and sticky and unpleasant to the touch. Children, and even adolescents, often react violently against it. Its impermanence also makes it an undesirable plastic medium for children's work. There is danger, however, of putting too much attention on the finished product by firing everything the child makes. It may be desirable for the child to consider his beginning efforts as experimentation or play and to fire only those pieces which he especially values.

Plate XXVII

Wood Carvings in Relief Designed and Executed by Junior High School Boys

Card Box Designed and Executed by a Tenth-Grade Boy

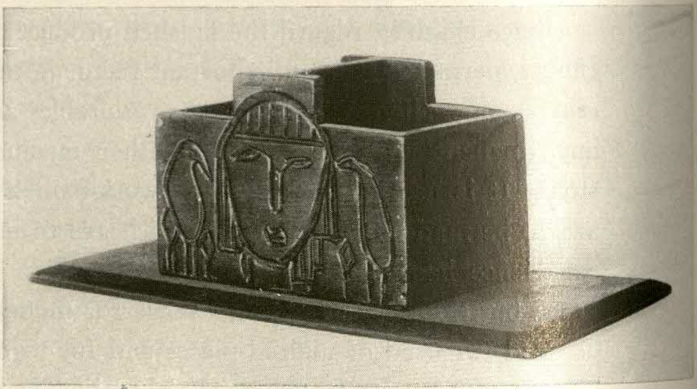


Plate XXVIII—"Nativity"—Carved in Balsa Wood by Junior High School Boy. Bayard Junior High School, Wilmington, Delaware.

(Photograph by Sunami

Formal devices and exercises for teaching little children should be carefully avoided. Devices whereby every child in the class learns to make a simple object in a step-by-step method dictated by the teacher, are to be condemned. For instance, a class is shown how to make a rabbit by first making an egg-shaped body, a smaller egg-shaped head, sticking on the ears, then the feet, and finally making two perforations for the eyes. Such methods not only produce stereotyped results, but deprive the child of the experience of conceiving form as a whole, or of inventing his own working method, or seeing the problem for himself. They also take the inspiration and joy out of plastic expression, and may retard the development of the child's plastic sense or even destroy it for all time.

The interest in sculptural media and expression grows throughout the elementary school years. The form concept, however, becomes more developed, and the child learns to recognize the finer variations of form within a mass, and attempts to suggest the larger muscles, to show the modeling of limbs, or to shape the features which hitherto were merely indicated by lines. While he has not yet become conscious of realistic results, or desirous of producing them, his observation is sufficiently keen and accurate for him to use a certain amount of realistic facts to obtain convincing form. Actually, the child still retains a large amount of the primitive method in his use of suggestion in design, in his selection of the larger characteristics of form, and the omission of details. He is guided more by spontaneity and impression than by conscious study of facts. He is no longer interested in miniature and intimate themes, such as babies and animals and their young, but works boldly on a large scale and employs subject matter centering in animals and people. In many cases animals, wild and domestic, are preferred. Horses are especially favored. The people he portrays are usually of his own age, engaged in activities within his experience and knowledge, but older people also come into his realm of expression—his parents or teachers, characters of his fancy, or those discovered in books (Plates XXVII and XXVIII).

These themes tend to express action, or to represent an idea or ideal. Thus, boxers, wrestlers, athletes, laborers, soldiers, pirates, and policemen are particularly popular with boys, and these characters are always doing something.

As the child gains considerable skill, he builds his work better, and has a greater understanding of his medium. This progress is an early indication of a far more advanced power and an interest in skill and craftsmanship which is developed in the later years, such as the junior and senior high school periods. There is a technical problem which needs discussion. Children often find it difficult to model animals and figures in clay because the legs break or bend under the weight of the body. Quadrupeds are particularly troublesome in this respect. It is therefore advisable to get the child to build a solid wall of clay between the legs, or to support an outstretched arm. This wall may be cut away after the clay has become leather hard and is capable of supporting itself, but it may also be left and incorporated with the design so as to give a greater feeling of sculptural form. The teacher may refer to Assyrian sculpture to see how this technique has been used to great advantage, for example, in the Winged Bulls. As was stated earlier there is a clay prepared for modeling which can be fired and which has greater density than pottery clay and therefore does not settle or bend as easily. But it is not advisable to use it with young children, because it requires greater skill to handle than the ordinary pottery clays.

During the later elementary grades, such as the fourth, fifth, and sixth, but particularly as the individual shows a need for it, the teacher may begin instructing the child more directly and consciously, both in the use of design and in the mastery of the craft. He can now talk of design and analyze the elements of design in a form, suggesting simplicity, rhythm, and proportion; for example, the graceful sweeping lines of a reclining tiger, or the solidity and bulk of the elephant. Trips to the zoo, the museum, or to the circus will be invaluable. The children will work both from life and from their imagination. The object should never be posed and copied. The child may work from a sketch he has made from a life model, or he may work from memory. The purpose of working from life is to gain power of perception. These experiments will help to strengthen the observation and creative powers. However, the teacher should be careful not to emphasize the realistic or photographic representation of an object studied, but should always attempt to make the child see the object for himself and employ his imaginative powers in interpreting it. Class exercises should be avoided as much on this level as with the younger child, since they tend to deaden individual perception and originality. Clay is the most suitable material for this age level because it is pliable and easily mastered, but other more sturdy materials such as plaster or wood may also be used.

Clay may present more challenging sculptural problems if the child makes a solid block of clay the size of the object to be formed and carves it out with a knife or tool when it is leather hard or completely dry. Carving in plaster would be done in the same manner; that is, the child would make a block of plaster the size of the form and carve it when it is dry or nearly dry.

Most children on the elementary school level enjoy working in the sculptural arts, but some are better adapted to them than others. There are those children who express themselves better in a three-dimensional medium. It is important, therefore, that these students be recognized and given special opportunity to work in a plastic material. The plastic medium suits most children of this age because of their need for manipulative activity and for releasing pent up energy. It also supplements the painting experience, because form in plastic expression helps the child-artist to conceive of form in painting, and often re-inspires him when he becomes weary. Thus, one expression adds to the other and insures a more complete absorption of the whole individual.

The adolescent years are the best adapted to plastic expression because boys and girls of this age desire energy-consuming activities.

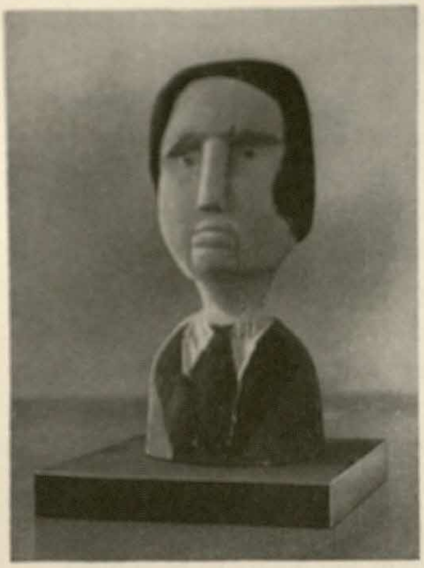


Plate XXIX

Polychrome Wood Sculpture by
Ninth Grade Boy.
Fieldston School.

Plate XXX

Wood Sculpture Carved from
Natural Tree Trunks by
Ninth Grade Boys.
Fieldston School.

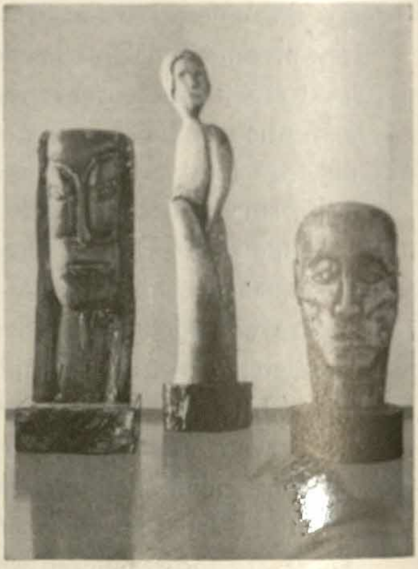


Plate XXXI

A High School Senior Blocking
out an Animal Form from Stone.
The Stone Sculpture in the
Background is made by
Ninth Grade Students.
Fieldston School.

Boys especially demand media that challenge their physical powers, and for this reason sculpture and modeling are extremely popular with them. The desire to master skills and techniques, and the love for tools and tool processes, develop at this age and increase both the interest and the educational values of this expression of art.

While animals still form a large part of the subject interest, the human figure seems most to engage children of this age level (Plates XXIX, XXX, XXXI). Boys are interested in modeling male figures, while girls prefer to do female figures. Both sexes like to do portraits, busts, figures in action and groups of figures. They may represent imaginative subjects, or derive subjects from their own activities, as sports or every-day occupations. They enjoy using one another as models, and sometimes a child will act as his own model and take the position which he desires to portray. In this case he is depending more on his kinaesthetic sense than on his power of observation, for he is feeling the pose rather than actually seeing the pose. Since the kinaesthetic sense is very active at early adolescence, it is a good method of learning and a device that the teacher should encourage. It is advantageous to have the children work from the nude model so that they can learn to visualize and construct the figure. The great personal interest which boys and girls take in the study of the human figure makes this a profitable experience. This interest is shown in the pride girls take in their dress and personal appearance, and in the way boys boast of their strength and their muscular development. When boys and girls are in different classes one of them may pose for the group in the nude. If this seems too daring or otherwise impracticable, a pupil may pose in gym togs or bathing suit. The latter method has been carried on with boys and girls on the junior high school level in various schools for several years with remarkable success.

It is wise to graduate the study of figure work from simple to complex problems, because students of the junior high school period are very ambitious and are likely to undertake problems beyond their ability, with failure as the result. The order of undertaking the work might follow in this manner is: a portrait or bust; a figure in action; two figures, as hockey players, boxers, or wrestlers. It is unwise to attempt groups of more than two figures unless the student shows particular ability to handle composition. Of course, the development will vary with the individual. One child may not advance to the point of working with groups of figures during the entire junior high school period, while another may be able to begin working with two or more figures at once. This is a problem which the teacher will have to recognize and solve for himself.

Younger adolescents acquire a keen sense of realism and a desire to know and execute the figure accurately. This tendency makes teaching sculpture easy and increases the possibility of developing technical power and training observation. On the other hand, it often proves a handicap to the creative and originative instincts. Therefore the teacher should be careful to give ample opportunity for imaginative work, and should stress the quality above the accuracy of design. Thus the teaching of design will be even more consciously focused upon than in the previous years. The teacher may point out dominant rhythms, organized and simplified form, significant lines that denote character, and the subordination of irrelevant details. He may also vary the experiences by working from the model on one occasion, then from memory and imagination on another. It must, however, be made clear that creative work does not occur only in imaginative conception. An artist can be as creative when working directly from life through his selection of materials, lines, colors, and motifs as he is when he conjures up compositions and designs. Creativeness lies within the mind and heart of the artist, and not in the objective world about him. The student as an artist should strive to transcend the material or realistic object in giving his own impression and interpretation of what he sees.

During later adolescence and in the senior high school period the individual gains considerable mastery of his powers. With proper training, there seems to be no limit to his development; he is indeed an artist both in his attitude toward life and in his personal creations. His interest in form and technique has increased, but with it has come an increase in creative power. Often students who have not felt the creative urge since they were very young become restimulated and re-experience it again with amazing force. There is a strong desire to feel, to be adult, and to accomplish adult workmanship. This urge often creates in young students an inordinate admiration for adults and, if the teacher is not watchful, they will tend to imitate him. It is important, therefore, to stress the integrity of one's own thoughts, ideas, and workmanship and to set it up as the highest ideal of the artist. Since adolescents have keen intellectual capacity, they can learn a great deal about the creative process, the element of form in design, and the various processes in the experience in sculpture. Carving, as contrasted with modeling, will offer better opportunity for plastic expression, but modeling will provide an excellent means of study, such as portraiture or figure work. Carving will prove a very fascinating and successful medium, especially carving in marble, yet wood will be equally attractive. Both round and relief sculpture should be experienced, as the student of this age is capable of achieving and understanding either craft. The teacher should not overlook the opportunity to develop a sense of appreciation of the sculptural arts through contrast of the student's work with the work of others. The interest in adult standards may be capitalized upon by helping the student to develop an appreciation of the masters.

The human figure will prove to be the most interesting subject matter during older adolescence, but all forms and subjects may come in for their share of interest. Sculpture is extremely important to students at this age level, both as a release to their emotions and as training of the muscles in developing manual control. Because ability varies greatly with individuals, the individual approach will be most desirable. Therefore, problems may range from the extremely simple to the complex. Among the complex problems for the gifted student, figure studies, portraits, and group compositions will prove interesting and challenging. The teacher will very likely find students who are interested in carving and modeling, as well as those who are not. It does not seem advisable to insist on extensive plastic experience for all, but every student may profit at least by one experience in sculpture to determine his aptitude for the medium. However, those who intend to enter the professional arts should have considerable work in sculpture, in spite of the fact that they may become painters or designers. The plastic medium is the most direct and effective means of experiencing form, and should take precedence over all other types of expression of form.

All children are sculptors by nature, but some may have this creative impulse so inhibited through neglect or adverse training that they may not respond to plastic expression even in the presence of stimulating media. This fact, therefore, refutes the doctrine that all the creative teacher has to do is to present materials to the child and allow him to express himself. Nothing may result from such a procedure. The teacher must actively try to awaken the dormant artist within the inhibited individual. This endeavor may take a great deal of time and experimentation—working with various materials, stimulating the imagination, training observation, and working from memory or imagination. Students of the same chronological age may differ widely in creative age. A student of fifteen may have the creative development of a child of six. The teacher must, therefore, take into consideration both the student's advanced intellectual understanding, and his under-developed creative power, in helping him to a suitable approach. This makes the individual approach more desirable and effective than any general method. But it places a greater responsibility on the teacher in detecting the real difficulties under the mask of superficial inhibitions such as fear, timidity, awkwardness or pride.

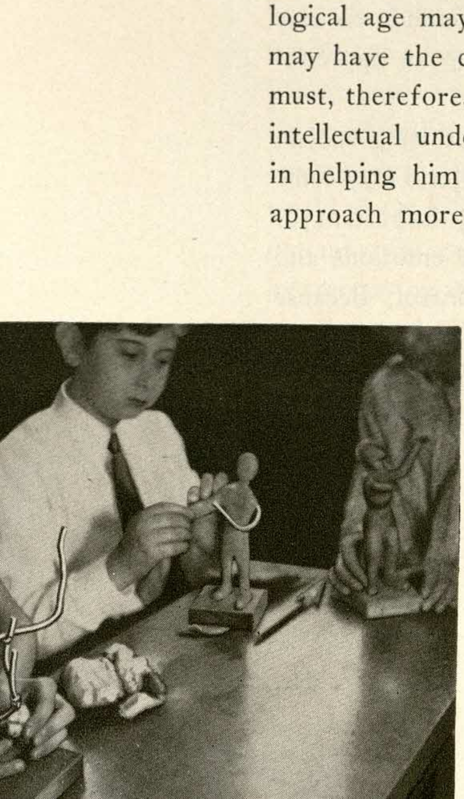


Plate XXXII

Steps in Modeling Figure on Armature First Year High School

Use and Construction of Armatures

Before considering the function and construction of armatures, it is important to say a word of warning against their misuse. In fact, it is inadvisable to employ an armature except in cases where its use is indispensable. Armatures should, however, seldom if ever be used below the high school grades (Plate XXXII). They may cause the sculptor to lose the solidity and unity of his form, and to engage in detailed and exaggerated poses. Even professional sculptors avoid armatures as much as possible. The making of an armature may be a very complex affair, especially armatures for the human figure, and the construction may prove so difficult that the student will weary of the plastic experience before he has even begun the real problem of modeling. The older student may, however, use the armature to advantage in making studies in plasteline from the human figure.

An armature is a supporting skeleton for a plastic form such as a human figure. It may range from a single stick around which a form is built to an engineering creation of pipes, wires, and wooden beams. There is no orthodox way of making armatures, but certain simple patterns have been used for many years by sculptors. The following description is a simple method for constructing an armature for modeling a human figure. These materials are necessary for making the armature:

¼″ lead wire, about 5′ will suffice for a figure 18″ high

5 yards, #16 binding wire

A wood base (size depends on size of piece, but a base 8″×11″ will serve for an 18″ figure)

An armature support made of heavy ½″ piping or metal strip (Plate XXXIII).

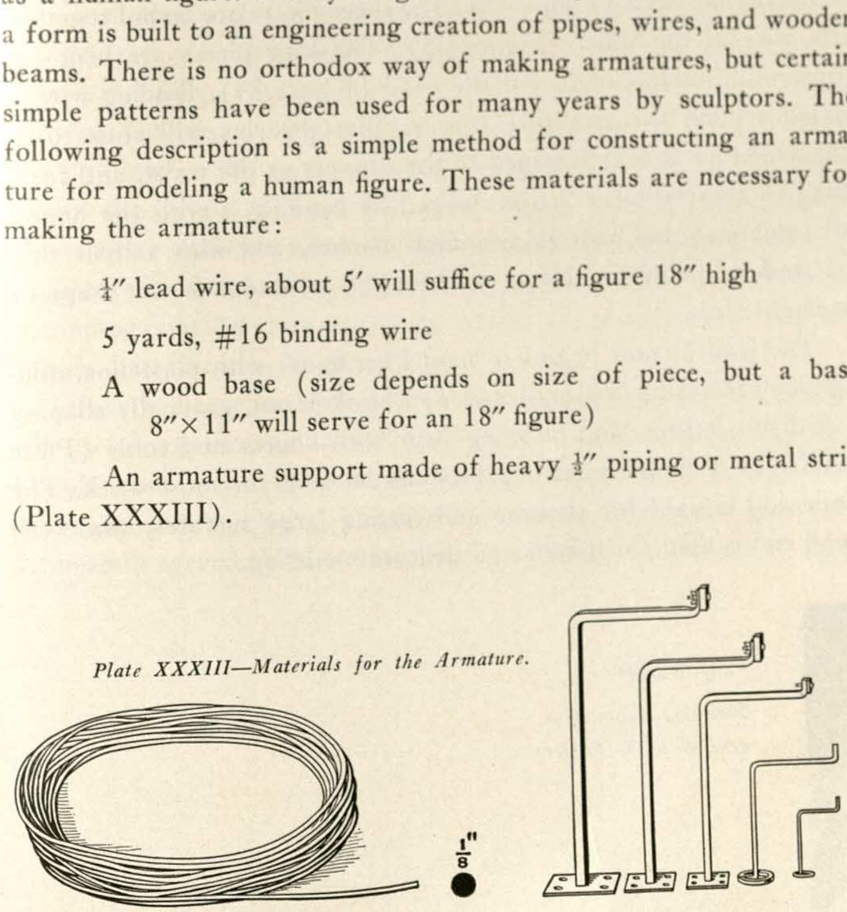
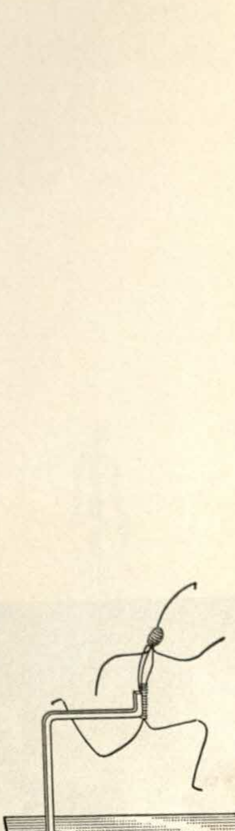


Plate XXXIII—Materials for the Armature.


(Courtesy of Ettl Studi

These supplies may be purchased from an art or sculpture supply store. If the artist is not within reach of a supply store he may use ⅛" soldering wire for the armature, ordinary iron wire for binding and for the armature support some heavy metal strips or wire from a local hardware store. The sizes of the armature, the armature support, and the base depend on the size of the figure.

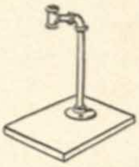


Figure 32

The armature support is the metal brace which holds the figure (Figure 32) in place and can be made of heavy wire, strap iron, or piping fitted with elbow and collar and fastened to a base with screws or nails. The proper height of the armature support will be equal to the distance from the base to the place where it enters the figure at the small of the back.

The armature is made as follows: Three pieces of armature wire are cut (Figure 33). Two pieces should each measure the height of the figure from foot to shoulder, plus the length of the arm and head. A little wire should be added to allow for the length of the foot. The short piece should measure the distance from the lower tip of the torso to the top of the head, plus an inch or more for the crook to support the head (Figure 33). The three pieces are bound together with wire at the waist (Figure 33). The long pieces are bent for arms and a hook is made for the head (Figure 34). Binding wire is wound around the armature wire so that the clay will stick to it. The armature is next fastened to the support at the waist, and fashioned to represent the action desired by bending it with the hands. All armatures are built in a similar manner, and with a little skill the student should be able to construct an armature in any shape or size he desires.

The student now begins to model his figure with plasteline, adding small pieces at first until it is well blocked out, gradually shaping it with his fingers, and finishing with both fingers and tools (Plate XXXIV). A simple modeling tool can be used for most work. The blade end is used for shaping and cutting large surfaces, while the small end is used for details and delicate modeling.

Plate XXIV

Finishing Action Figures with the Fingers

Designing for Sculpture

Inherent in sculpture are certain aesthetic values which the good artist will try to understand in planning his design. Sculpture is a medium for expressing form, and the unity and simplicity of the mass must be first considered; that is, in the visualization of any idea, the artist should try, as far as possible, to keep that idea in a co-ordinated mass. For example, in a human or animal figure the entire mass will form a single and simple unit. The limbs will not be extended in several directions, or the mass be so cut away that the figure will be difficult to comprehend or confusing to the eye. The form should be so simply designed that one recognizes at a glance a sleeping figure, a standing nude, or a crouching lion. The pose, whether passive or active, should reveal itself to the observer instantly. For example, the figure of a soldier, by its erectness, its vertical columnar structure, should give the spirit of a soldier better than the uniform or trappings. The limbs and other details should flow in rhythm with the mass and seek to emphasize rather than to detract from the whole unit. To accomplish this sense of unity, the artist often keeps the limbs of his figure close to the body and cuts away as few spaces as possible, such as the space left between the legs or between the arms and body, as openings in the mass might disturb the feeling of unity. Some artists leave few or no openings in the structure and even fill in the spaces to keep the feeling of solidity.

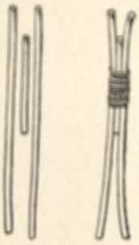


Figure 33

Examples: Michaelangelo and the primitive sculpture of antiquity, or among our modern sculptors, John B. Flannagan, William Zorach, and Oronzio Maldarelli.

Often a clever craftsman in trying to demonstrate his ability, will go to extremes in modeling realistic details and in choosing difficult poses, such as dancing nymphs, poised on one foot with arms extended, and flying Venuses with flowing tresses and garments elaborately carved. While these studies exhibit cleverness and skill,

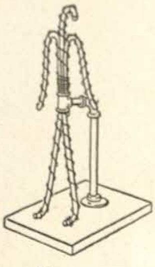


Figure 34

they are not necessarily art. The truly sensitive artist will consider the dictates of his medium and design, and will not let a trivial element of skill get the better of his aesthetic judgment.

The beginner in sculpture may need advice on his choice of theme or subject matter, as he is likely to select material beyond his ability, and so face failure at the outset. A simple theme, a single figure, human or animal, may serve as a good beginning. This theme need not be a dictated problem for the entire class, but should be suggested according to the child's interest and experience. Giving children stock problems and formal methods of procedures, such as conventionalized animals according to a set pattern, may destroy their originative spirit. The child can draw on his experience and imagination which are more fruitful and responsive than any number of teacher-devised exercises.

Sculpture in Relief and in the Round

Sculpture is generally classed as sculpture in relief and sculpture in the round. Relief sculpture is designated as a low relief or high relief, but relief may be low, medium, or high. Low relief is also technically called bas-relief, which means the same thing since the work "bas" is an adopted word from the Italian meaning "low." Relief was originally applied as wall decoration and its decorative function was to keep the appearance of the wall flat and undistorted. Low relief covers a wide variety of types, the simplest is that in which an incised line alone is used. The line is scratched or carved into the surface outlining the forms or lines represented. Examples may be found in the wall carvings of prehistoric man and in the early work of the Egyptians. Another simple type is that in which the background is cut to a shallow depth and the forms left standing with their details incised. In a third, shapes are slightly and skillfully modeled to suggest form, but at the same time the whole decoration retains its flat and two dimensional appearance. While low relief was practised by most of the early civilizations, the Egyptians excelled in the art, and were in particular masters of the last type described. High relief is the type in which the design is raised markedly from the background, and in which the forms are strongly modeled. Della Robbia's "Singing Boys" is a good example. The art of the Renaissance furnishes many examples of this type.

Sculpture in the round is carved on all sides and the form or object is fully shown. It usually stands by itself on its own base. Sculpture in the round may be seen from any angle, while relief sculpture is made to be seen from one viewpoint, principally a position directly in front of the work.

Relief is easier to comprehend and execute than sculpture in the round, and it will be found expedient to begin with this form in teaching children. When the study of relief is undertaken, the best results will be obtained by starting with one of the simpler forms of bas-relief, the incised or low-modeled relief.

It may also be advisable to begin modeling in clay or some other plastic medium before undertaking carving in a hard resistant material. Planning the design will be the first important step. The beginner should avoid any foreshortening or perspective and use the profile and front views of objects as much as possible. He should bear in mind that a relief should appear as a flat and two-dimensional decoration. The child may begin with a solid block of clay, incise his design, and scoop out the background to give form, or he may build up his design on a shallow slab, one level at a time, until he has achieved the desired modeling.

High relief may be attempted by the student and, after the experience he has enjoyed in bas-relief, it should be a fairly simple operation since it is merely modeling in higher form. As has been explained in the foregoing discussion, extreme simplicity of design and the subordination of detail should be the aims striven for at all times for the sake of the aesthetic effects of the sculpture as well as for ease of construction.

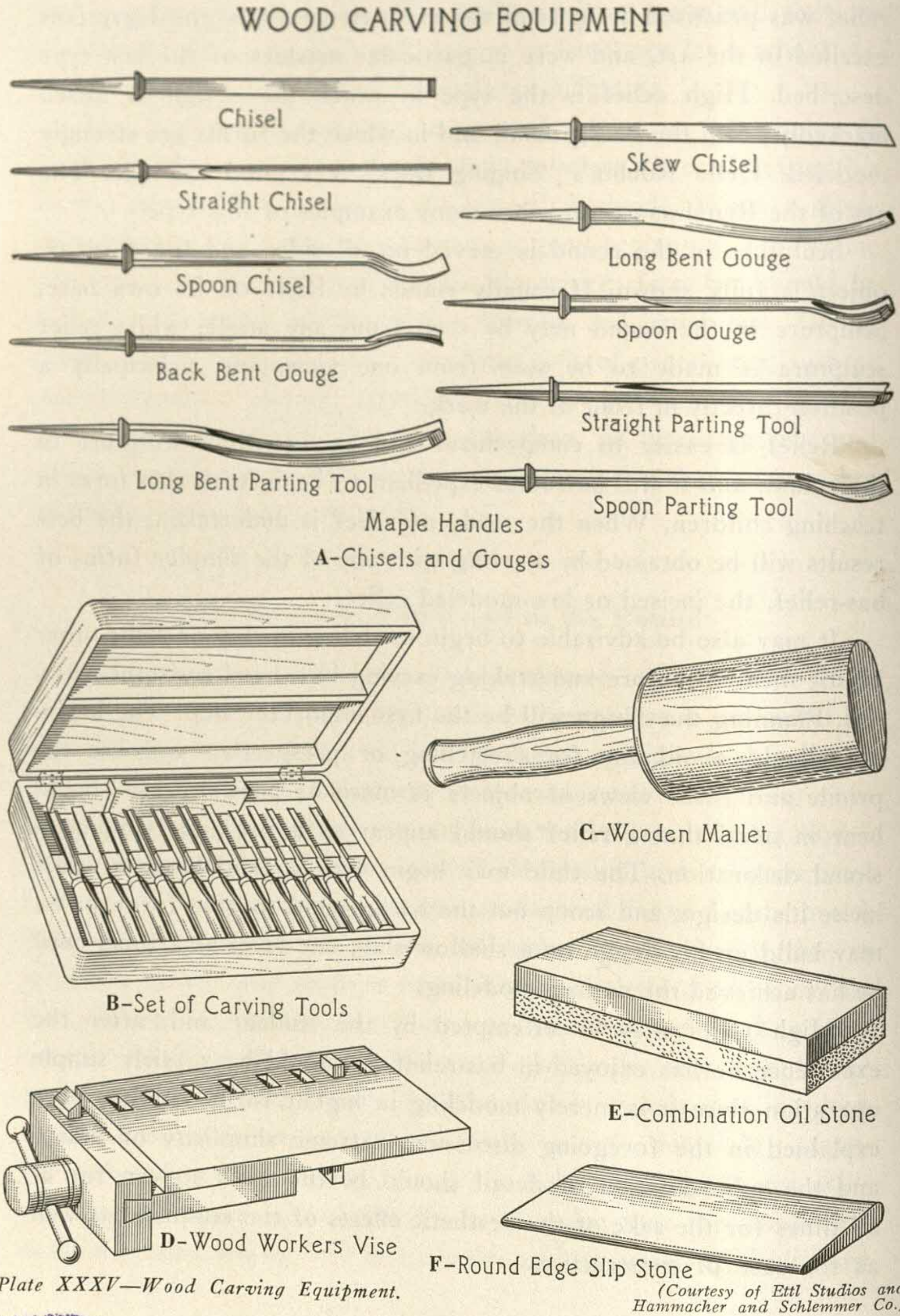


Plate XXXV—Wood Carving Equipment.

(Courtesy of Ettl Studios and Hammacher and Schlemmer Co.)

Carving

In carving, like modeling, it is easier for the beginner to work in relief as it involves fewer problems of form and technique. Carving may be done in many materials, but the simplest and most practical for school use are plaster, wood, and stone. We shall discuss the process in wood and stone; plaster carving would follow these same processes for both relief and round carving, but the work would be simpler since it is a soft medium and has no complicated grain. Plaster slabs or blocks may be cast in cardboard frames or boxes and carved in the moist or dry state.

Wood Carving.—Next to plaster, wood is the simplest of the media of sculpture and the most adaptable to children's uses. It is an engaging medium for adolescent boys and girls, and satisfies their craving for an energy-consuming activity. The process of wood carving is not difficult and can easily be mastered with a little skill. Before describing the process it is important to discuss the necessary equipment, which includes four types of tools (Plate XXXV): the chisels and gouges for cutting (A and B), the mallet for driving the chisels (C), vises for holding the work (D), and stones for sharpening the chisels (E and F).[3]

Chisels and gouges are made of various sizes and shapes suitable to their use. They can be distinguished from each other by the end used for cutting, the end of the chisel being straight while the end of the gouge is curved. The blades of chisels and gouges also vary, such as straight or bent. We shall consider only the straight tools, as they are better adapted to school use. The size of a chisel is determined by the width of the cutting end (Ex.———), and the gouge by the sweep of its curve (Ex. ‿). The curves of gouges vary

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[3] Carving tools may be purchased from any large hardware store, such as Hammacher, Schlemmer and Co., New York, or Bingler Co., 6th Avenue and 3th Street, New York.

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from shallow to deep depending on their purpose. For the beginner it is advisable to use only a few tools. The following will be found to suit all purposes, in carving both relief and in the round.

Flat chisels, (——) ⅜ inch, (———) ½ inch, (—————) ⅞ inch.

Gouges (shallow sweep), (◡) ¼ inch, (◡) ⅜ inch, (◡) ½ inch, (◡)⅞ inch.

Gouges (deep sweep), (∪) ⅛ inch, (∪) ⅜ inch, (∪) ½ inch, (∪) ⅞ inch.

It is important to realize that in ordering tools for a class, the entire set is not needed for each child since the students do not all do the same kind of work at the same time. Fewer of the large tools than of the small ones will be needed, and it is best to give the beginner only a few tools, as he may become confused with too many at the outset. A half dozen of each of the tools suggested should equip a class of a dozen students.

In addition to the carving tools each student will need a wood carver's mallet (No. 1 or No. 2 will serve all purposes) and a wood carver's rasp (6 or 8 inches long), for smoothing surfaces. The student should learn to sharpen his own tools for efficient workmanship. Three kinds of stones will serve all purposes. The carborundum stone should be used first, then the edge should be finished on an Arkansas slip stone. The burr left on the inner edge of the tool is removed with a stone which fits the shape of the tool. Two kinds of Arkansas stones fit most tools: the Arkansas round edge slip stone for curved tools ⬯ and the Arkansas knife stone for v-shaped tools ▽. In sharpening and honing, a good grade of machine oil should be used. For school use it is best to grind the tools blunt. Tools may be ground with a long or short flare. A short flare will not break as easily as a long one.

Some kind of vise or clamp will be needed to hold the work in position while the student is carving. Ordinary iron "C" clamps will serve to hold work in relief flat to the bench or table, but a vise is necessary for holding work in the round. Wood carver's benches may be purchased at a modest sum, but the price of equipping large classes with such benches may be prohibitive. Carpenter's work benches are equipped to hold sculpture pieces. The piece is placed between the bench stops and tightened with a vise similar to that on the carver's bench. A substitute for ready-made vises, for schools that cannot afford the more expensive wood carver's benches, is described later in this chapter.

Woods for Carving.—The hard woods provide an excellent medium for carving, but they are difficult for the beginner to obtain and handle. Therefore, it will be advisable to start the student of wood carving with semi-hard or soft wood. Walnut, mahogany, and apple wood are excellent for carving, but they are fairly expensive for quantity use or for beginners. White wood and gum wood are extremely inexpensive and very easy for carving. Three-quarter-inch stock is successful for doing work in high relief. Raw wood is not as desirable for carving as seasoned wood because it is damp and will check in drying. Seasoned woods suitable for the purpose may be procured from the local cabinet maker or lumber mill.

Wood Carving in Relief

The Design.—The design is of foremost importance in a work of art and must be carefully considered before cutting the materials. Design in relief differs greatly from design in the round because relief is a flat medium with certain emphasis on form. It will be advisable for the beginner to select profile or full views of his object and to avoid three-quarter views and any pose that requires difficult foreshortening. Thus, if he is modeling a horse in clay, he will find the side view simpler than any other view. In carving the necessity for simple views and the simple interpretations of form is greater because the material is stubborn and liable to split or

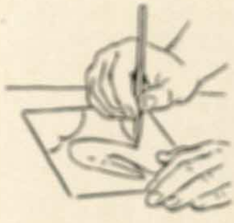

Figure 35

break. Therefore the wise beginner will select not only a simple view, but a simple subject; for example, a polar bear or an elephant will be easier to carve than a deer or a giraffe.

Simplicity in relief is demanded for the sake of design as well as ease of workmanship. The student will find excellent suggestions in Egyptian, Assyrian, Mayan, and Cambodian wall carvings. After he has had a few experiences in bas-relief, he can work toward high relief by adding greater depth to his carving. When he has gained sufficient skill, both in the use of his craft and in visualization and expression of form, he may employ any view or foreshortening he desires. The good artist will always make certain that he has done his best with his design and that he has planned it in relation to the requirements and nature of the material. It is a good suggestion for the beginner to play with a useless piece of wood to explore the possibilities of carving and the grain of the wood.

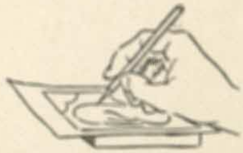

Figure 36

The Process.—When a satisfactory design has been made, the young artist may transfer it to his wood with a carbon paper, or, if he desires, sketch it directly on the wood with pencil or charcoal (Figures 35 and 36). It is often helpful for the beginner to model the design in plasteline first so that he may have a guide to follow (Figure 37). But the student should always regard these aids as a guide or sketch, and not as a model to copy from. He should therefore transcend his original sketch in his completed work. After the design has been applied to the block, the artist proceeds to outline each figure by holding his chisel vertically and driving it down into the wood with his mallet (Plate XXXVI) to a depth of about an eighth of an inch (Figure 38). The kind of tool used will depend on the line to be cut, that is, a curved tool should be used for round lines and a flat tool for straight lines. In using his chisel, the student must keep the bevel of the tool on the outside of the line so that all cracking or crowding of the grain will occur outside the figure. A channel may be made around each figure by cutting one-eighth of an inch back of the incised line and holding the tool at a slant so as to remove

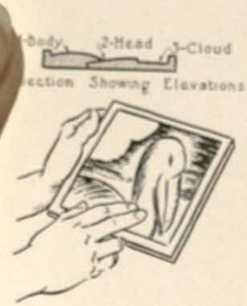

Figure 37

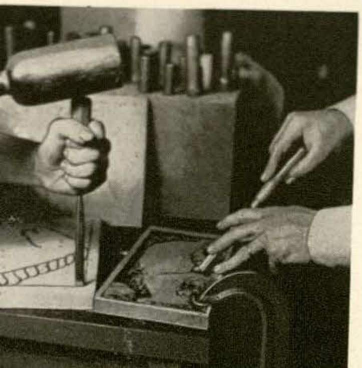

Plate XXXVI
Outlining the Forms with the Chisel and Gouging out the Background

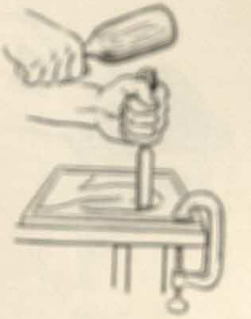

Figure 38

the wood, as indicated in Figure 39. The channel acts as a safeguard to the edges. A channel may also be cut with a deep gouge by digging along the line.

The next step is to remove the background areas. This is done with the gouges, which are used in a slant-wise position, held in the left hand and tapped with the mallet, working always in one direction and away from the carver (Figure 40). The carver must take care not to gouge too deeply as the wood will split, but he may gouge to the depth of his line.

The student then outlines the shape of the desired object again with the carving tools and repeats the operation of cutting with the gouges, this time in the opposite direction. That is, if he cuts across the grain at the outset, he now cuts with the grain. The carver cuts in three directions: with the grain, across the grain, and diagonally at a forty-five degree angle with the grain. He never cuts against the grain because his tool will break and rip the wood. The tools should be used in a free manner and the student should strive to work all over the design at one time and not try to complete any one section before another is begun. He should avoid scratches or breaks in the surface. Throughout the carving, the work must be clamped to the table with the iron "c" clamp, or fixed between a vise and a bench stop. Another excellent device for holding pieces of wood flat in relief carving is to make a frame for the piece by nailing furring strips to the table on three sides and nailing the fourth side at an angle with the piece. Then a wedge is driven between the fourth side and the carving which locks the carving rigidly in place. When the deepest area has been cut, the student will cut down to the next area and so on until he has all the levels established. He should check the depths of his carving with his plasteline model. If he has made no model, he will have to depend on his judgment.

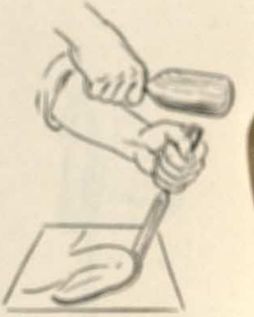

Figure 39

After the relief has been established, the carver may proceed to smooth all surfaces and edges with his shallow gouge, which he holds in both hands, and works back and forth over the surface

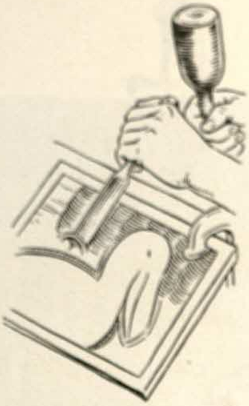

Figure 40

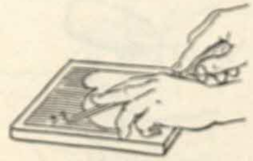

Figure 41

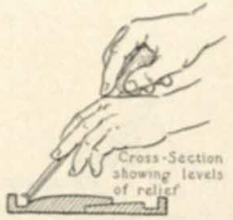

Figure 42

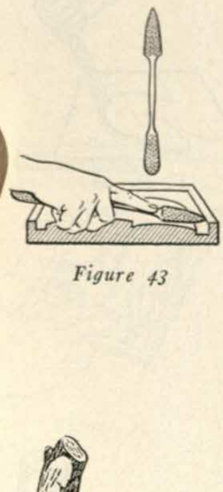

Figure 43

until it is clean (Figure 41). He is now ready to begin modeling, and proceeds to round off the edges or bevel down the shapes to give the sense of form desired (Figure 42). He should, however, work the background and modeling together and not attempt to finish one before the other. The surface may be smoothed with wood rasps and sandpaper, first going over it with a rough or medium grade of sandpaper and then finishing with a fine grade (Figure 43). However, a good sculptor does not like to use rasps or sandpaper but does all his finishing with the gouges and chisels which produce a more vibrating surface because of the varied texture they produce. The work can now be finished by applying a coat of wax, and rubbing the surface until a dull glossy patina results. The natural wood rubbed down with wax usually produces a beautiful finish, but if a richer color or a change of color is desired, the wood may be stained with a wood stain and then polished with wax. A very desirable finish can also be produced by burnishing the surface. The burnisher is a metal tool with a blunt end. The carver rubs the surface with the tool until a glossy, smooth surface results. Burnishing closes the pores of the wood by friction.

Wood Carving in the Round

Carving in the round is a thrilling experience, although it is more difficult than carving in relief. If the teacher can secure the limbs or trunk of a tree, such as apple or white wood, the opportunities for designs will be much greater and more interesting. The young artist should not plan a design in advance but should take the natural form he has been given and study it to see what it will suggest. Sometimes he will be able to clearly visualize a form in the wood, and at other times he will have to tax his inventive powers. The size and shape of a limb may suggest an active or a reclining figure, or a crouching animal, or it may be well to use part of the form (Figure 44).

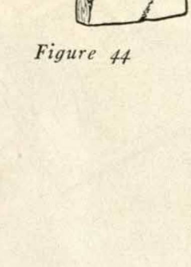

Figure 44

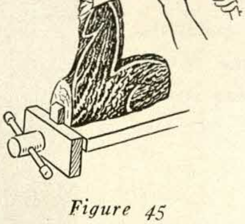

Figure 45

The young artist may find it helpful to make a plasteline model just as he did in making the relief, only it will be more expedient in this case, since the problem of carving is more difficult. He can model the form he sees in the tree limbs to make certain that his imagination has not erred. Then with the wood supported in a vise (a revolving vise is ideal) so that he can turn the object at any angle, he is ready to proceed with cutting (Figure 45). The larger carving chisels and heavier mallet should be used for large work (Plate XXXVII). The young artist should constantly turn the form around and work over all of it generally to get the sense of the entire design before finishing any one part (Figure 46). He will find the larger gouges and flat chisels effective for the rough cutting, and the smaller tools effective for finishing. The smaller tools will also help in the more delicate modeling, but the student will use them with reserve, as small tools may tend to concentrate his attention on details. When the student has completed the carving, he can finish the surface with his tools, or he can use the wood rasp and sandpaper finally (staining if desired) and rubbing the piece down with wax (Figure 47). The sculpture on Plate XXX was done by a group of ninth grade boys, the designs being worked out of the original shapes of the rough limbs.

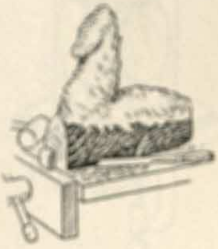

Figure 46

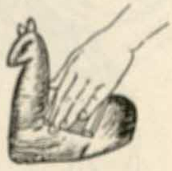

Figure 47

Carving from the Block

If the natural limbs or trunks of trees cannot be obtained, stock milled lumber will have to be used. This wood is obtainable in solid or veneered blocks, and can be purchased in a size to suit the design. The same precaution already suggested should be taken with the design. The block should be studied to discover how the form can best fit into it, and then the design should be sketched in.

In reproducing the design on a geometric block, a view of the form will have to be drawn

Plate XXXVII

Carving Sculpture in the Round

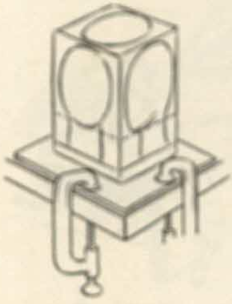

Figure 48

on each of the four faces and on the top. Of course, each view will be different, except the side views, which may be symmetrical. It is advisable to draw the profile view first, then the front, the opposite side view, the back, and the top. Each view must coincide exactly with other views (Figure 48). The block is now ready for carving and may be put in the vise. If a vise is not obtainable, a board larger than the block may be screwed to the block through the under side and fastened to the bench with clamps (Figure 48). The carving should begin as before, with the larger tools. First use the gouges and flat chisels and cut off the corners and edges that project beyond the design; turn the block constantly to get an impression of the whole work (Figure 49). When the form has been well rounded out, redraw the lines that have been cut away into the rough form with chalk, paint, crayon, or charcoal, and proceed to carve out the limbs and smaller details (Figure 50). When carving a figure, carve the head and limbs in a single shape without indicating features or details, doing the same with the whole figure until it appears well sculptured in the rough.

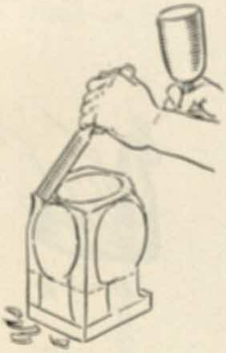

Figure 49

The tools must be kept sharp at all times, for a dull tool will crowd the grain and make an imperfect surface. The student must learn how to sharpen his tools expertly so that he can work under the best conditions.

After the form has been roughly blocked out, smoothing can be done by working over the surfaces with the shallow gouges. The student can now begin the modeling of the facial features, the body, and the limbs (Figure 51). The work will be easier, and the design more pleasing, if the details are subordinated and realism is avoided. The details, such as features and limbs, can be merely suggested or blocked out. The finishing must be done as before with the tools or with the rasp and sandpaper (Figure 52). The figure may now be stained and polished as hitherto described (Plate XXXVIII).

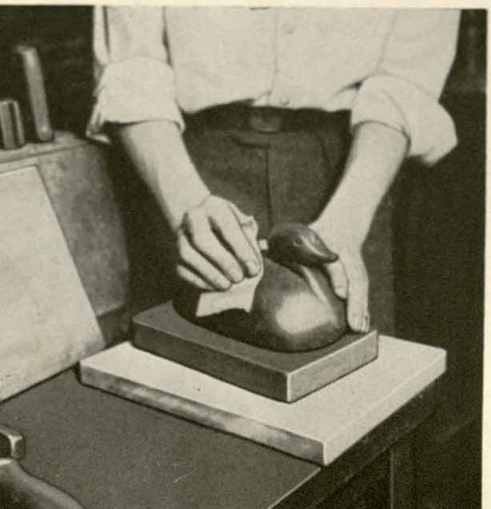

Plate XXXVIII

Finishing with Sandpaper

Figure 50

Stone Sculpture

Sculpturing in stone is the peak of achievement in the art of sculpture and is a thrilling experience for the young artist. It requires little more physical prowess and skill than sculpturing in wood, and is a good alternative for work in the three-dimensional experience. The tools and processes are somewhat different.

Materials.—For the young artists beginning stone sculpture it is expedient to select a soft stone. Indiana limestone is the best to begin on, but a soft Vermont marble may be used instead. The teacher and his group may want to go to a stone yard and select odd pieces which can be purchased at a nominal price. Varied and irregular shapes provide excellent possibilities of design. These shapes should not be changed, but the young artist will study them as he did his native tree forms to discover the figure hidden within.

Figure 51

Simplicity and unity of form are even more important in stone than in wood or clay, since stone is a more solid and weighty material. The designer should strive to make his sculptural forms appear as a mass, even though they represent natural objects. To attain this result, he should not over-carve the stone, first, because of the design and, second, because the material will not endure it. The student can begin feeling his design in the mass by drawing with charcoal or paint in big simple shapes (Figure 53). When he has discovered a form that fits, he can describe the various views on each surface as he did in the wood sculpture (Figure 54). The tools used for work in stone are, of course, different from those used for wood, and the minimum equipment for the beginner should include: a one and one-half pound iron hammer (No. 611) and the following cutting tools: 2 point chisels (No. 600B, No. 600), 3 tooth chisels (No. 602B, No. 602A, No. 602), 2 drills (No. 603, No. 603A), 3 flat chisels (No. 601B, No. 601C, No. 601D), and a 10-inch and a 6-inch rasp.[4] (See Plate XXXIX. The diagrams of tool ends are in actual size.)

Figure 52

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[4] Numbers refer to the catalogue of the Ettl Studios, Inc., New York.

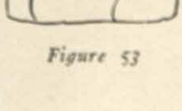

Figure 53

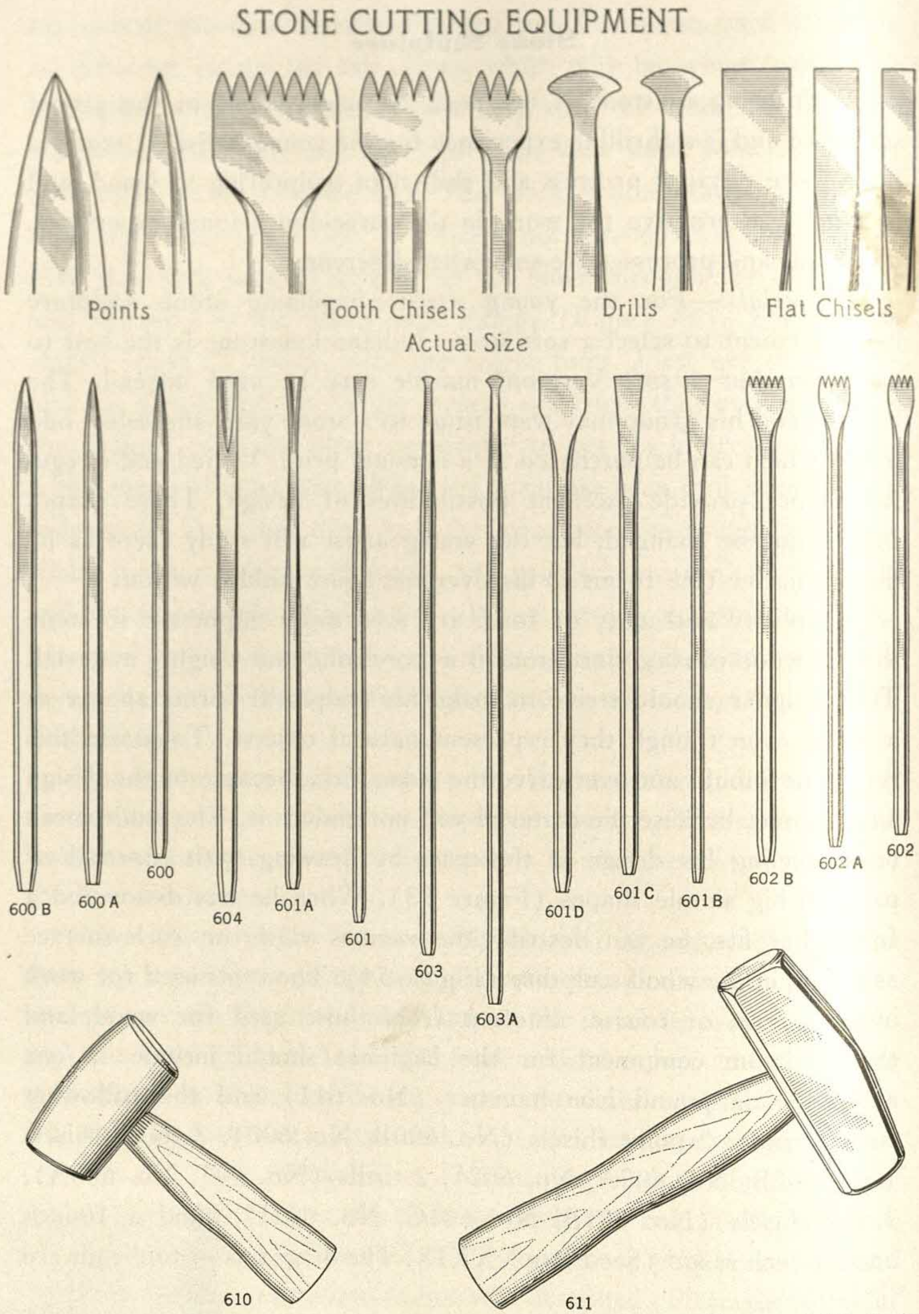

Plate XXXIX—Stone Carving Equipment

(Courtesy of Ettl Studios)

Hard tempered chisels should be secured for carving hard stone and marble, and soft tempered chisels should be used for carving soft stone such as limestone. The pointing tools for soft stone should have blunt points or they will dig too deeply into the stone. These facts should be stated in ordering tools. If stone sculpture is employed below the junior high school period, a light hammer should be used, a one-pound hammer proving manageable. Also the smaller chisels should be provided. It is, however, not advisable to begin stone carving at this stage, unless a special student or group reveals a particular need or capacity for the medium.

Figure 54

Process.—Because of its greater weight, the stone will need no vise to hold it in place, but a small stone should be plastered to a larger stone to hold it. The student will first take his point chisel and iron hammer, and with long brisk strokes, begin chipping away the stone in the rough, removing large chunks at first, and working with increased care as the form begins to appear (Figure 55). Following the same technique as in the wood carving, he will block out his entire form before any finishing or details are done, turning his stone frequently to see how the design is progressing. The blocking out of the form should be done as far as is possible with the point chisels. A good carver can block out his whole form with the point chisel alone. It is best for a beginner or young student to use the point chisel for most of his carving and to introduce the other chisels later. It is important to continually re-draw the desired outlines with charcoal or paint as the work progresses, but when the surface becomes smooth a lead pencil should be used. All carving is done with hammer and chisels. After the roughing is completed, the smoothing of the surface may be accomplished by first using tooth chisels, drills, and flat chisels, employing short rapid strokes and light blows, and then refining with the rasp (Figure 56). The tooth chisel may be used for most of the carving, but the drill will be found indispensable for cutting hollows and concave planes. A wooden mallet may be used in finishing, as the iron hammer produces

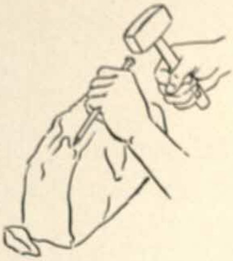
Figure 55

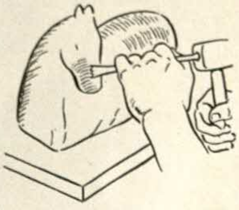
Figure 56

a vibration in the stone and may cause important details to chip off or crack. Modeling of subtle forms, facial features, and details should be done with flat chisels, drills, and rasps, and the piece finally finished with the more careful use of the rasps and sandpaper (Figure 57 and Plate XL).

Bas-Relief in Stone

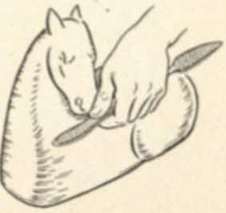

Figure 57

Relief in stone is a much simpler process than working in the round. A slab two or more inches thick of limestone or Caen stone may be used. The design is first sketched on the stone with charcoal and then incised with the drill and a mallet (Figures 58 and 59). The background is removed with the point and tooth chisel by holding them at an angle and tapping them with the iron hammer (Figure 60.) Great care should be taken, as too hard a blow will split the stone. When the relief is sufficiently high, the modeling and shaping may begin with the use of tooth chisels, flat chisels, drills, and rasp, in gentle, short strokes and blows (Figure 61). After this process is completed the smoothing and finishing may be accomplished by the same method as that employed for carving in the round. Problems in relief may precede those in the round until the student has gained sufficient power and confidence to undertake round sculpture.

Carving in Marble

Marble carving is to many young artists the most thrilling adventure in sculpture. The firmness of the material and surface holds endless enchantment for the creative worker. Every young sculptor should be rewarded with at least one experience in carving marble. It is advisable to begin with Vermont marble because it is softer and easier to carve than other kinds. When the student has acquired skill he can approach Tennessee and later Georgia marble.

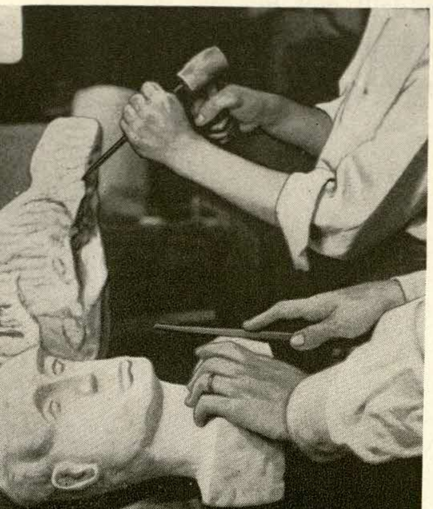

Plate XL

Blocking the Form out in the Rough with the Pointing Tool and Finishing the Surface with the Rasp

While marble is a harder and more stubborn material than the soft stones that have been described, the process is exactly the same in every particular for both round and relief sculpture, except that hard tempered chisels should be used and pointing tools with sharp points. Since marble is a much more costly material than the softer stones it will be wise for the student not to attempt it until he has gained skill and experience with softer stones. However, the quality of the material will not affect the design. A good piece of sculpture depends primarily on the artist's concept of form and design, and a poor design will not be enhanced in the least by cutting it in marble.

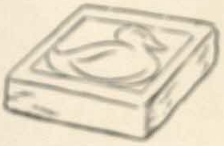

Figure 58

Polishing.—Polishing of marble requires a more complex process than finishing limestone, that is, if the artist desires a smooth and polished surface. He may leave the surface rough and grained, using only the chisels and rasps.

Figure 59

In polishing, the rasp process is followed by a fine carborundum stone which is done by rubbing the surface in a rotating motion with plenty of water. It is best to hold a wet sponge in the left hand and allow water to drip constantly on the part being rubbed. The process is repeated with a honing stone, using water in the same way. This operation brings out the natural color of the marble. The marble should be washed thoroughly to remove the particles and stains left by the honing stone. If further polish is desired, the surface is rubbed with a felt buffer and putty powder (tin oxide), which should be applied with a brisk rotating motion and the use of plenty of water in the process, letting it drip on the surface as already described. When finished, the work should be thoroughly washed with water. Stone or marble should never be waxed.

Figure 60

Summary

Sculpture is an art of form and mass. The good artist will try to respect these qualities when working in stone or wood. He will endeavor to make stone appear as stone, and wood as wood.

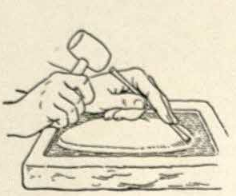

Figure 61

Modern machine devices have made it possible for the artist to manipulate even the hardest material with such ease that he has often lost sight of the native qualities inherent in his materials. It is for this reason that new processes, such as casting and pointing in stone, have been omitted in this discussion. The aim has been to develop the feeling for form and value through direct contact with the material, and through dependence on the artist's eye and judgment, rather than on tools or devices. While skill is an important factor of the experience in art, it has not been discussed by itself, for it is part and parcel of creative experience. The artist who meets each experience with all his senses alert, is certain to become skillful.

The youthful artist will find his best models in the works of the ancients, particularly of the Egyptians and Cretans, the early primitives, the Mayans, the African negro, and the moderns. These artists never lost sight of the necessary aesthetic values in their art. They regarded simplicity and directness as fundamental laws, and worked with their hands and hearts close to their materials. There is probably no greater aesthetic discipline, and yet no fuller creative and emotional satisfaction, than those that are to be derived from the experience in sculpture.

Chapter Five

The Child as Potter

Plastic Expression as a Creative Medium

Give a child a lump of clay, and in a short time he will fashion it into a form. Clay possesses to an unusual degree the quality of stimulating the originative and manipulative powers, and its great plasticity makes it suitable as a creative medium for persons of all ages and all degrees or ability. To the child it has a natural appeal and affords one of the most adaptable and fertile media for satisfying his creative yearnings.

That children reveal the desire for plastic expression at an early age is demonstrated by the simple example of the young child making mud pies, churning the mud with his hands to feel it ooze through his fingers. Behind this messing about with mud are deeper meanings; the child is really satisfying some very important native urges, such as the kinaesthetic impulse to use his muscles, and the emotional impulse to expand pent up feeling. His apparently random motions, the forerunners of plastic expression, may be capitalized by the teacher for the art experience of even the youngest child.

Form Consciousness in the Young Child

The child's cycle of development, between three and six years of age, is characterized by three stages: During the first, the manipulative stage, the child seems to be just playing with clay, squeezing

Plate XLI

Finishing a Hand Built Piece of Pottery it, pulling it apart, or pounding it in heaps. This is the period when he is satisfying the tactile as well as the emotional impulse and is learning to use his muscles. During the second, or exploratory stage, the child experiments with the medium to discover its potentialities for him. He makes strips, coils, pellets, balls, and curious minute forms, which are often meaningless to the adult, but which eventually lead to form consciousness. Finally, during the third stage the child realizes his capacity to use form and employs the medium in fulfilling his desire for expression. The child naturally evolves out of the formlessness of the mass he plays with in the first stage, a definite form by the time he is in the third stage.

Two Tendencies in Plastic Expression: Modeling and Pottery

At this stage the child shows two distinct tendencies. He prefers either to represent natural objects through the modeling of human figures and animals, or to work in abstract forms through the making of pottery. Since we have discussed the child's inclination for modeling and sculpture in the preceding chapter, we shall now deal only with his interest in pottery—an interest which begins with the child of pre-school age and develops through adolescence to maturity.

The Development of the Child as Potter

The development of the plastic expression in the child-artist in relation to pottery is similar to that described in relation to sculpture, and follows the creative characteristics and abilities of each age level. It will be interesting to trace these changes from early childhood through adolescence. As the child learns to manipulate the plastic medium, his concept of form increases. From six to nine years of age, this concept grows more rapidly and at the same time he acquires increasing skill. He makes a greater variety of shapes, larger in size and of better construction, than he did on the previous level. The use of design at this level is still not conscious, for the child works mainly through his feeling. The teacher can encourage the use of design by helping the child master his medium, and by suggesting new forms and shapes.

During the last three years of elementary school, or with children nine through twelve years of age, a decided development in the child's growth manifests itself, both in his creative expression and in his skill in handling the medium. This development is due to a growing interest in all manipulative activities, in the desire to master new elements of skill and technique, and in an increased capacity for learning. The teacher can greatly strengthen the child's skillfulness by introducing new and more advanced processes of construction, and can also stimulate his originative powers by using a conscious study of design values as they apply to pottery making. In addition, he can enrich his appreciation and love of aesthetic values by reference to such primitive arts as Egyptian, Aztec, and the American Indian pottery.

In early adolescence, namely, during the junior high school period (usually ages twelve through fourteen), pottery is apt to become very popular with the student because of his increasing desire to express himself by using all kinds of skills. This tendency presents both an advantage and a disadvantage in teaching—an advantage because the student can develop to a high degree his craftsmanship and his mastery of pottery construction, decoration, and glazing; a disadvantage because the student is liable to neglect fine design in his anxiety to acquire skills. The teacher should counteract this undesirable tendency by emphasizing design qualities, and by enriching the student's appreciation through a study of modern and ancient pottery. Another obstacle to interest in design is a strong desire for realism. Although this tendency is more common in sculpture than in pottery, it manifests itself in pottery in the imitation of adult work and the sentimental use of realistic or naturalistic decoration. Therefore, it is important for the teacher to encourage good design and to try to inspire original thinking.

Students of this age also become interested in pottery because of its usefulness. The value of things as utilities has a strong appeal to them. They often ask the teacher, "What can I do with this thing?" "Can I make something for my mother's birthday?" "May I make something that I can use?"

A division of the interests of boys and girls is apt to occur during this period: boys want to make ash trays, vases, paper weights, and tiles, and the girls will make bowls, dishes, and tea sets. This difference in interests is attributable to the same urge that underlies what one teacher has called "the code of masculine and feminine." Boys will deliberately avoid doing anything that girls do, lest they be accused of being girlish. This prejudice can be overcome in time by first allowing boys to choose their own subjects, and then gradually introducing a wider field of activity. In some progressive schools where boys and girls work together, this prejudice does not arise. The student should be made to realize, however, that an artist must be above prejudice and that his expression should have a universal value. His teacher can further encourage him by informing him that much of the world's greatest pottery is the product of men.

In later adolescence, the senior high school period (usually ages fifteen through seventeen), pottery becomes an accepted and significant art to the student. He has attained the artist's attitude toward the expression and has learned to regard it for its aesthetic as well as its functional value. For example, an object is equally important as a thing of beauty and an object of use to him. The code of the masculine and feminine no longer operates, but is replaced by standards of design and workmanship. One may discover girls executing large sculpture bordering on the monumental scale, and boys making delicate pottery and fine tableware. The desire for acquiring skills and techniques is not only intensified, but develops into an aim for professional results which often leads to stylization and imitation of adult methods at the sacrifice of youthful and original expression. The teacher must make a special effort, therefore, to help the pupil and to keep his creative ability and originality alive, and to make his growth parallel to the growth of his technical power. The introduction of a new technique, for example, throwing pottery on the wheel, often helps to bring about this desired result. The use of new methods and processes for this purpose is discussed later in the chapter. An awakened intellectual interest likewise may subordinate the creative power of the student and tempt him to imitate professional work; the teacher may counter this propensity by emphasizing the original work and good design. Both the intellectual and technical interests may, and should, be capitalized for the student's benefit. For instance, the intellectual interests can help to broaden appreciation through an extensive study of pottery and potters of all ages, and a technical interest can be developed through advanced study of pottery making, glaze making, and firing.

At this period, those who are to become professional craftsmen are apt to emerge from the group and progress far beyond their fellow students. All students, however, can achieve relatively satisfactory results and acquire a deep appreciation of the craft. In order to allow for a thorough and broad study, it may seem advisable to separate the experience in pottery and in sculpture of the older adolescents, because each art has numerous and complex methods and materials. Among younger children, however, especially in the primary grades, there should be no separation of modeling and pottery, and the child should be allowed to alternate between them as the creative urge moves him.

Pottery as a Medium for Children

Pottery is one of the oldest arts, and from its origin it has appealed to the child and to the artist. As has been said, it stands out as one of the best media for child expression. While the interest may vary or fluctuate between plastic and two-dimensional expression throughout the child's development, there is no time when the desire for pottery making is completely nil among all children. If there is a dearth of plastic arts in the schools, it is due to neglect in the curriculum, not to the child's lack of interest. This is true especially on the secondary level, when the pressure of academic studies tends to crowd out the arts.

Design Grows Out of Material

One of the aims of the creative experience is to develop the idea with the medium, or, to put it another way, to have the design grow out of the material. The great contribution of the potter's craft is that it does combine creation and manipulation in a single activity. The child-artist may begin with an approximate form in mind, but as he builds his pot, his aesthetic judgment and the behavior of his medium may suggest a change of shape or size. Thus the child is not merely a technician executing a pre-determined form which requires only skill, but he is an artist working with all his aesthetic powers alert and aware that every move he makes effects the ultimate form.

Common Teaching Methods Destroy the Concept of Design

Pottery making requires a special method of teaching that shows awareness of both the art of creating pottery and the growth of individual perception. The ordinary methods of teaching, where the design and execution of a form are separate and distinct experiences, betray a lack of familiarity with these two factors. The child, for example, will first design his pot, often without previous experience in the medium, and then proceed to execute it just as he designed it. This plan seems a little presumptuous for a beginner to follow, for even the accomplished craftsman does not stop considering design until his work is completed. He changes the form or shape as the medium and his aesthetic judgment demand. The habit of separating the designing and the construction of a piece has had a damaging effect on education in art, for it has put emphasis on skill instead of creativeness. Children actually become more concerned with the materials than the planning of the design. As a result, in their desire to get their fingers into the clay, they are apt to slight the design, or sometimes may want to imitate or copy professional work. Teachers not only permit these tendencies, but often encourage them by giving emphasis to skill over creativeness.

Devices which aggravate this situation and further deprive the student of the use of his originality, have been frequently employed. For example, designs for pottery are sometimes made by cutting shapes out of folded paper with the shears, the resulting design being only accidental rather than planned. The drawing of contours and silhouettes on paper in the same careless fashion is equally fruitless. Another objection to designing for pottery in this way is that such designs are conceived in two dimensions, while pottery is a three-dimensional form and should be so conceived. When the student has had experience in form, he may use a contour sketch or silhouette to guide him, but this should be the result of conscious planning. Good potters, however, seldom use these devices, but create directly out of clay.

The templet, often used in building pottery, may fall into the foregoing class if made with the same lack of attention to design.[1] While the templet is sometimes an aid in helping the child keep the form of his pot under control, it also prevents him from changing the shape of his pot if he so desires; or if the pot changes of its own accord in the process of construction, the child becomes confused and either does not see that he can never attain his original conception, or that the new shape has many good possibilities in itself. Although many teachers recommend the use of the templet, the author hopes to discourage its use by young children and beginners.

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[1] The templet is a cardboard or plywood cut-out used to gauge the shape of the pot. See page 130.

It should be made clear that the criticism is made not of the devices themselves, but of the way in which they are used. The templet, or a similar device, may be very helpful to the student who has had considerable experience in the craft, but to the beginner it is an aesthetic crutch. Therefore, it is safe to say that such aids should be avoided by the beginner until he has gained an understanding of design related to structure. It is best to have him conceive his form directly in the clay and to work with design experimentally, remaining constantly aware of the problem until the piece is completed. Just as an idea governs the organization of words, so should the aim of all crafts be to allow the design to grow out of the process and medium, and thus govern its shape and structure.

Teaching Design in Pottery Making

The teacher, however, must be careful not to over-teach by discussing design at too great length with the beginner. By means of short talks he can help the child to become aware of certain elements of design, but the child should be allowed to discover some of the values for himself. More real teaching occurs during the activity than in the verbal analysis concerning it. Thus, in helping the child to solve his own problems, to overcome failure, or to realize success, the teacher is giving his best instruction and no amount of theorizing can surpass it.

Some methods of instruction in design now commonly practised should be avoided; for example, teaching according to a fixed set of principles, such as requiring an entire class to make a piece of pottery to illustrate rhythm or balance. Thus, through working out a number of problems, each devised to demonstrate a single principle, the child is expected to gain a complete sense of design. On the contrary, these exercises produce formal results and seldom terminate in creative work. The sameness of approach can easily be detected in the ordinary and uninspired shapes that the class turns out. The fact is that an individual does not become aware of aesthetic values one at a time, but all values are active all the time in a creative experience. The degree of the child-artist's consciousness of these values, and his use of them, will depend on his maturity and capacity. This statement does not imply that the teacher should not simplify or limit the problem to meet the child's ability and understanding, but it definitely suggests that the experience, though graded to meet a special level of understanding, should be a whole experience based on natural methods of learning stimulated by the child's predilection and imagination.

It is important, therefore, for the teacher to consider first the age level of the child he is teaching, and to gauge his method to conform to it. He must be careful to keep the experience within the understanding and ability of the child, and not to recommend or permit projects that are too simple or too difficult, for over-simplified problems retard the child and diminish his interest, while problems that are too difficult frustrate him. If the child is very young, the teacher will have to depend largely on the child's intuition for design, and should help him along by simplifying his attempts and showing successful or interesting examples made by other children. Often a demonstration by a teacher gives the child an idea and shows him the use of the material. With older children, the teacher will find it advantageous to analyze and illustrate the problem involved in the construction of form, to explain the potentialities and limitations of the material, and then to give them the opportunity to experiment for themselves.

Throughout the process, the teacher should keep the child aware of the problem involved by a critical comment, a word of praise, a suggestion of change or caution about the principal difficulties. Having the child stand off at a distance to inspect his work, to look at it from eye level and above, to relate it to his original idea, to anticipate the result, and to compare it with other works of art, will help to give him the proper approach to design.

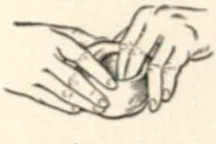

Figure 62

Processes of Pottery Construction and Their Adaptation to Child Development

The Primitive Method.—The most primitive method of making pottery is to block a form out of a solid lump of clay and to hollow it out with the fingers (Figure 62). This method is most natural to young children from about four to six years of age, and is most successful with them as it suits their simple sense of form. They first rough out a general shape and pinch and pull the clay, working it with their fingers until the result satisfies them (Figure 63). They often add handles, spouts, or covers, and scratch decorations, or appliqué designs with tiny coils (Figure 64). They make numerous objects—bowls, baskets, and dishes—which are related to definite projects, or which they intend to use as gifts for their parents or friends. Children of this age need little guidance, but the teacher should help to stimulate them or to assist them when they are in difficulty. Children are usually prolific little artists once they get the sense of the thing or once their imagination is tapped. They can go a long way on their own momentum. It is unwise for the teacher to make demonstrations before the class with children at this age level, for they are individualists, seeking their own ways and ideas. Then, too, no general approach would suit their widely varying individual capacities. The teacher should be especially cautious not to give class exercises in which all the children follow in the step-by-step process, as in the making of a bowl, for example, to "first make the bottom, then the sides, and now the handles." Such a process is often misconceived by the teacher as simplifying the problem, when all it does is to make little copyists out of little artists. It is best to let each child find the solution to his own problem, with just the right amount of direction by the teacher.

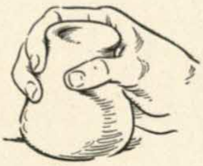

Figure 63

The primitive method of making pottery is recommended for young children because it fits their simple sense of form, which is to see form in total mass and then to add details. The older student

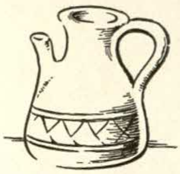

Figure 64

can follow more complex and deliberate processes of construction which, given to the young child, would tend to confuse and upset him. If an individual, however, demonstrates the ability for more advanced methods, or discovers them for himself, the teacher should help him to master them.

It is important at all times that the clay be properly wedged if it is to be fired. The teacher may find it advisable to wedge the clay for the very young children (Plate XLII). The tools used at this age level are few and simple, as most of the work is done with the fingers, but sharpened orange sticks and tongue depressors will prove helpful in making incised lines, or in cutting away or smoothing.

The Coil Method.—Building pottery with coils is a simple process and one within the abilities of most children, being especially successful in the primary and elementary grades. This process is more advanced than the primitive method and requires added skill and a slightly different vision. While in the primitive method form is seen and constructed as a whole, in the coil process it is built up gradually. This process, though simple, is used by advanced students and professional potters and is often preferred to other methods. Much of the world's greatest pottery, Indian pottery, for example, has been constructed by coils. It should be considered as a desirable process for all age levels, and for some individuals it may serve as their permanent way of making pottery. But the simplicity of the method makes it very effective for teaching children.

The coil method is excellent for elementary grades because children at this age have an advanced sense of design and an increased interest and patience with technique. The younger child, as has just been suggested, visualizes form as a unit from the very beginning, and alters the whole form if he desires a change. On the other hand, the older child starts out with an approximate form in mind which he builds gradually, deliberates upon, and changes as the form grows. Thus in his approach he is more experimental and thoughtful but less spontaneous than the younger child.

Plate XLII

Wedging Clay

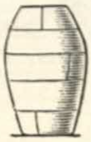

Figure 87

form that it limits him and makes his work appear mechanical, but he can soften or change this form by gentle curves or variation of the planes (Figure 88). For example, the child may visualize a vase as made up of three forms, a flared cone on a sphere resting on an inverted hemisphere for a base (Figure 89). Thus he does not visualize in silhouette but in volume. Such an approach should give the young artist a real command of design, and not leave it to whim or accident. Of course, too much emphasis on the analytical approach may produce mechanical results. The child's intuition and feeling should play a large part in the process. Good design is fundamentally a product of good sense plus feeling. Thinking and feeling should constantly work together. It must be recognized that such a conscious and analytical approach to design should be attempted only with older students, perhaps from about the sixth grade upward.

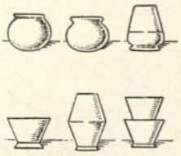

Figure 88

Building Flat-sided Pottery by the Piecing or Sticking Method

Pottery of flat sides, rectilinear or polyhedral forms, may be built by assembling flat shapes and welding them together with clay. For example, if a cubical vase were to be made, the sides and bottom would be made separately by smoothing flat slabs of clay (of about three-eighths of an inch in thickness) with a ruler or straight edge (Figure 90). These shapes would be set together and pinched at the edges, then a strip of fresh clay would be wedged along the joints on the inside of the pot (Figure 91). The advantages of this kind of pottery are that it adds the large field of straight-sided geometric forms to the child's experience and that it is in harmony with the simplicity of modern design. As suggested with curvilinear forms, the young artist should visualize his design in simple geometric forms, but this time he should use such rectilinear forms as cubes, rectangular solids, pyramids, and their variations (Figure 92). The danger of this method, however, is the temptation to misuse it, because of the

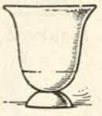

Figure 89

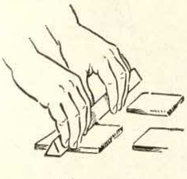

Figure 90

great pliability of the medium, in an attempt to imitate other materials, such as wood or metal, and so push it beyond its aesthetic limits. For this reason the sensitive teacher will use it with discretion and probably not employ it until he feels that the child has gained the necessary feeling for form and design through the other method. It is not wise to use it below the junior high school level, and then only if the child is ready for it.

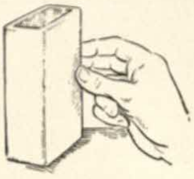

Figure 91

Thrown Pottery

Throwing is probably the highest achievement of the potter's craft and the ultimate goal of the young potter. As soon as he gains the feeling for plastic expression, desire for throwing pottery becomes intense. However, the ease with which a form is made under the hands of a skilled worker often leads the young artist to believe it is an easy accomplishment. The process requires intense concentration and perseverance over a long period of time to develop the necessary skill for satisfactory results. Therefore, throwing should not be attempted by the uninitiated or the too young. Because skill and aesthetic power are variable, it is difficult to state the exact age when the child should begin throwing pottery. It is safe to say that only a few individuals in the elementary grades are ready for this experience, but that the number increases on the upper levels. For this reason throwing may be more suited to the senior high school than the junior high school or elementary school levels. Of course, it must be borne in mind that it is after all an individual matter and that some children in the elementary school may be more suited to throwing than high school students.

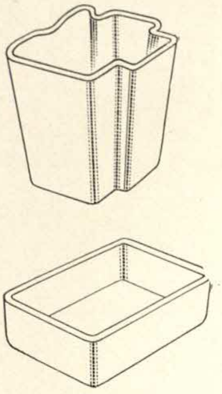

Figure 92

Thrown pottery is made on a wheel. While there are many kinds of wheels driven by human or motor power, the principle is the same in all. The kick wheel, which is the easiest to control and the most economically built and maintained, is a simple machine

TOOLS FOR THROWING POTTERY

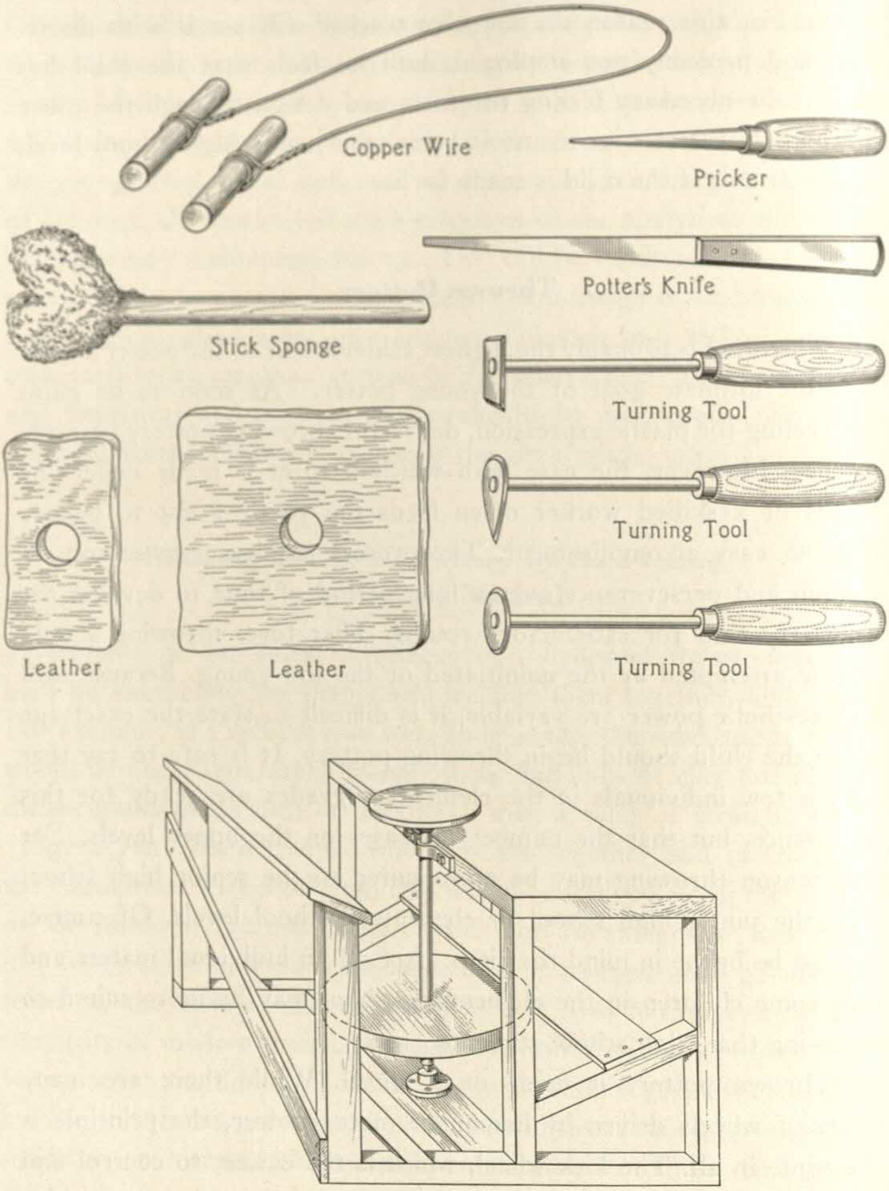

Plate XLVII

operated by the feet.[3] The mechanism consists of two horizontal wheels set at the extreme ends of a vertical shaft. The small wheel is at the top and on it the pottery is thrown. It is called the head. The larger wheel is at the bottom and is counterbalanced to give even movement and increased momentum. The shaft revolves on a pivot of ball bearings. About this mechanism a wooden frame is constructed resembling a table and seat. The table includes a top for working and a foot rest. The two wheels are so set that the head comes about even with the worker's waist and the larger wheel at his feet (Plate XLVII). The wheels are set in motion by kicking the large wheel with the right foot with a forward motion. It is from this manner of operation that the machine derives its name—kick wheel. This motion drives the two wheels (since they are fixed on the same shaft) in a counter-clockwise direction. When ready to throw, the worker starts his wheel briskly to a good speed, then rests both feet on the foot rest and steadies his body, which should be as still as possible while he works. Poise, steadiness, and balance are important to successful performance. When the speed runs down, the worker stops and starts the wheel up again. This machine not only makes the attainment of all the necessary speeds possible, but it also leaves both hands free for work. The wheel may be started at a brisk speed with the feet and kept running for some time while the work proceeds. The wheel must revolve rapidly while centering, and much more slowly while pulling up the cylinder, and very slowly while putting on the finishing touches.

The necessary tools for throwing are a thin copper wire with a piece of dowel fastened to each end, a pricker, a potter's knife, a sponge fastened to the end of a stick, a piece of leather, turning or shaving tools, as in the diagram, and a wide piece of leather or hide (Plate XLVII).

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[3] Kick wheels may be purchased from Jack D. Wolfe Company, 62 Horatio Street, New York City. Two kinds are available, one at $110 and one at $135.

A piece of clay is first wedged well, not too stiff or too soft, but moderately tough. Good wedging is assured by cutting the strip into slabs on the wire, criss-crossing them, and wedging them together in one mass (Figure 93). All air holes must be expelled, as they will not only cause the pot to blow in the fire, but will give considerable trouble while throwing by causing thin spots in the walls and the piece to get off center. A piece of clay is rolled into a ball, about half the approximate size of the finished piece.[4]

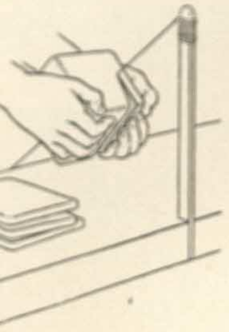

Figure 93

The wheel is set spinning rapidly and the ball is thrown briskly on to the center of the head. Both feet are placed on the rest and the body is held still. The hands are now wet in a container of water, kept before the worker, and cupped around the ball of clay to center it. The left hand is held firmly against the clay bearing hard on the head of the wheel with the elbow pressing against the body. The right hand moves over the clay forming it into a half a sphere with its flat side on the head of the wheel (Figure 94). This process is called centering. The clay is now brought up into a truncated cone and down again a few times by pressing both hands against its sides (Figure 95). This action helps to wedge the clay further, assuring uniformity of structure. Both hands are placed around the clay with the fingers overlapping each other for steadiness.[5] The left hand should be next to the clay. The thumbs are pushed down into the center of the top to almost the head of the wheel and gradually worked out to hollow the ball (Figure 96).[6]

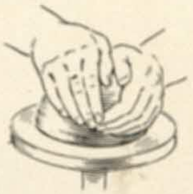

Figure 94

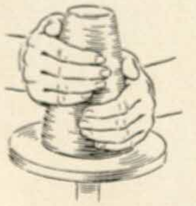

Figure 95

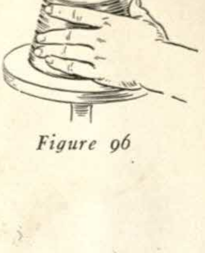

Figure 96

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[4] This is a very arbitrary means of measurement. Experience and skill will best tell the student how to measure the exact size, but for the beginning he is cautioned against starting with too large a piece of clay. It is better to handle a piece that seems too small.

[5] Whenever possible the hands should brace each other while throwing either by resting one hand against the other or by interlocking the fingers. Steadiness is an important factor in getting a good mechanical result.

[6] *Another method of hollowing.*—The bottom of the desired bowl or vase must be completed before any attempt is made to bring up the cylinder or to form the shape. To do this the flat part of the left fist, braced against the right hand (which is wrapped around the side of the clay) is forced into the center, leaving a thickness of at least one-half inch in the bottom (Plate XLVII, No. 1). This method is more often practical with some students than the first method, as the use of the thumb in hollowing has a tendency to gouge or become uneven.

All the while the wheel must be kept moving rapidly. The clay is next formed into a cylinder by drawing up the mass, that is, by gently pulling up the sides between the fingers of the left hand and the first finger bent double of the right hand, inserting the left fingers into the hole and keeping the right fingers on the outside of the form (Figure 98 and Plate XLVIII, No. 2). In raising the form, the aim is to keep the walls of even thickness, but slightly tapering at the top. The wheel should be slowed down a little during this operation. As the piece grows and widens the whole left hand may be inserted to form the inside, while the right hand works on the outside (Plate XLVIII, No. 2). When a perfect cylinder is achieved it may be molded to any form (Fig. 97). When flaring a shape, pressure is applied to the inside of the pot with the left hand while the outside is steadied with the right hand. In making an inward curve or taper, pressure is applied to the outside of the pot with the right hand and steadied on the inside with the left hand (Plate XLVIII, No. 3). With small-mouthed shapes, the top of the vase must be kept small since, once the clay is stretched, it is difficult to reduce its size. If the top becomes too thin and irregular, it should be cut down by holding the potter's knife or pricker just below the distorted point and cutting it away. The beginner must not attempt to finish a preconceived design at the outset but should experiment, centering his clay, making perfect cylinders, and varying the shape until he has acquired some skill. He may then attempt a planned but simple piece. The hands must be kept wet throughout the operation. If the fingers stick to the clay it is a sign that the hands are too dry. However, they must not be dripping wet as too much water will make the clay too soft to work.

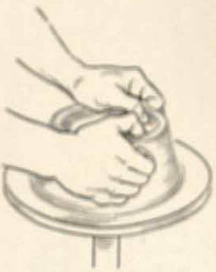


Figure 97

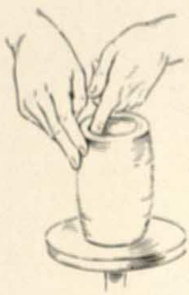
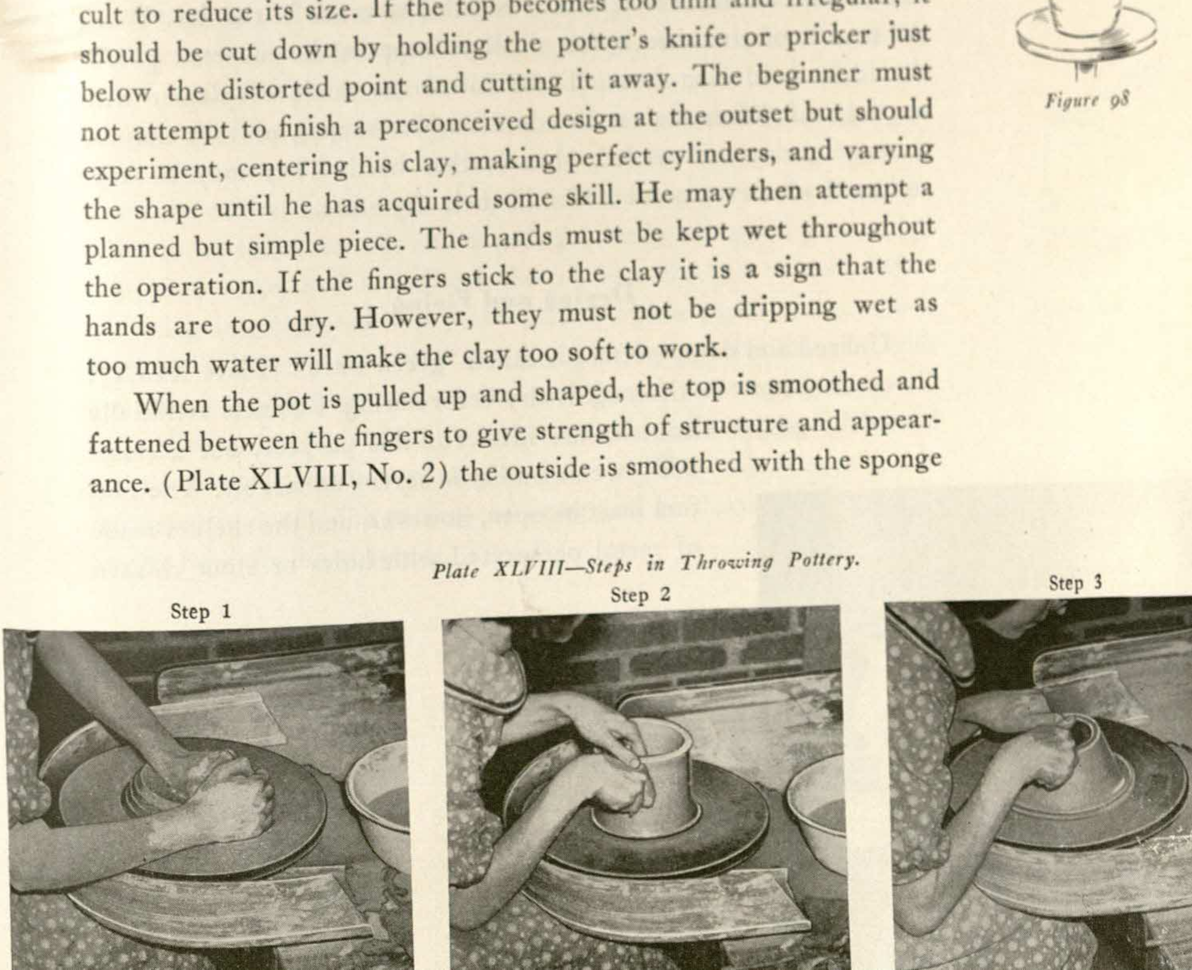


Figure 98

When the pot is pulled up and shaped, the top is smoothed and fattened between the fingers to give strength of structure and appearance. (Plate XLVIII, No. 2) the outside is smoothed with the sponge

Plate XLVIII—Steps in Throwing Pottery.



Step 1

Step 2

Step 3

and the inside with the sponge on the stick (Figure 99). Any water which has accumulated inside the pot must be dipped up with the sponge on the stick. It is important to do this several times in the process as water accumulating in the bottom will cause the piece to become too soft to work. It may also cause cracks to appear in the bottom while drying. The pot is cut away from the wheel with wire attached to the dowels. The dowels are held in each hand and the wire pressed firmly to the head of the wheel and passed under the base (Figure 99). The pot is removed and placed on a plaster bat.

The pot must now be tooled, that is, the base or "foot" must be thinned and shaped. The foot is left heavy to give support to the piece, but the superfluous clay must be removed by turning or shaving with special tools. The shape of the pot is determined by the inside shape—that is, the outside contour is made to conform to the inside contour, never the other way round. The form is ready for tooling when it has become leather hard. It is turned upside down on the wheel, centered, and fixed with pieces of fresh clay, and tooled. The base is hollowed out last with a shaving tool (Figure 100). The base should be made thin, else it is liable to crack in the fire. When the mouth of the vase is too small to support the inverted pot, it should be held in a form. These forms are made of plaster with openings of different sizes to admit various shapes, or they may be thrown in clay and tooled when leather hard. They may be kept and used whenever needed even in their dry state.

Drying and Firing

Unfired and damp pottery is called "green ware" (Plate XLIX). Green ware must be thoroughly dry before firing. Cabinets artificially heated by gas or electricity are ideal for this purpose, but a closet built over a radiator serves admirably. The bottom must be open, however, and the shelves made of metal perforated with holes or stout chicken

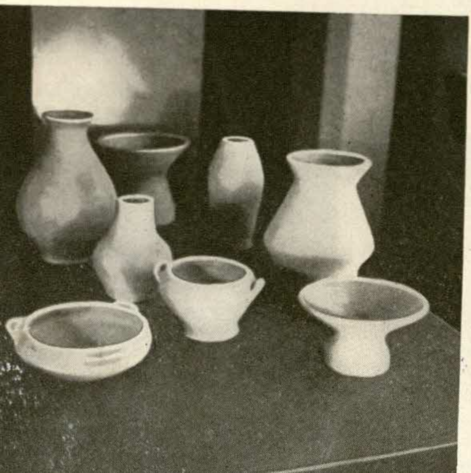


Plate XLIX

Green Ware Ready for Firing; Work of High School Students wire to allow the heat to circulate. Pottery may be dried easily at ordinary temperatures, but there is a tendency for the top to dry quicker than the bottom, resulting in splitting and cracking. This danger may be averted by reversing the pieces when the upper part shows signs of drying sooner than the lower part. Clay ware, especially large sized pieces, should be dried slowly. The artist may control drying speed by putting green ware on low shelves and gradually moving them to higher shelves where the atmosphere is warmer.

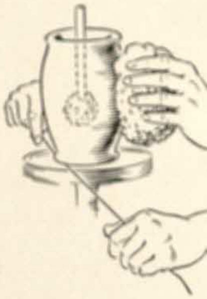


Figure 99

When the pottery is bone dry, it may be fired. It is fired in a special furnace called a kiln, which is an oven with walls of fire brick. It may be heated by electricity, gas, or fuel oil. The kiln we shall describe is heated by gas and is called a gas kiln. This first firing is called the biscuit fire and receives no glaze, with the exception of underglazing, which will be discussed later. The objects can be stacked close together in the kiln and may touch each other but not the walls of the kiln, called the muffle. They should be placed half an inch or more away from the walls. Small pieces may be stacked inside the larger ones and the pottery may rest directly on the fire-brick shelves and floor of the kiln. As the bottom of the kiln becomes filled, shelves of fired tile are placed on spurs or saddles and a second layer is stacked. This operation continues until the kiln is full. The door of the kiln is well sealed with fresh clay, or other material, and the kiln is fired for from twelve to fourteen hours depending on the wares inside. The firing proceeds slowly in order to let the steam off, and then is gradually brought up to a high heat. Cones are used to indicate the temperature and to show when the firing is completed. They are placed within sight of the spy—or peep holes—so that they can be seen during the firing. Cones are made of different compositions which melt at varying temperatures. For example, if the firing point of the glaze or clay is known, a cone of that temperature is placed in the kiln, and when it bends the firing is done. The process of firing will be discussed at greater length later in the chapter.

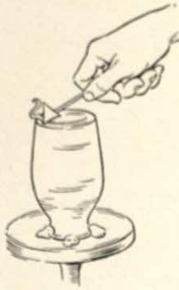


Figure 100

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The Educational Values of the Glazing Experience and Grading Glazing Problems to the Various Age Levels

Glazing is the crowning experience of the potter's craft and the test of the potter's skill and artistic powers. For the child it is a thrill and delight to see the dull chalky coat of glaze on the pot come out of the fire a beautiful shining hue. Young children regard the change that takes place in the kiln as some form of magic which they do not fully understand but regard with respect and wonder. Therefore, it is a great misfortune to regard the work of young children as too trivial to fire or glaze, because it deprives them of this unusual experience and satisfaction. Often children's work is allowed to crumble, or is destroyed, or painted and lacquered as a makeshift for glazing. Such practices not only deprive the child of a necessary experience and limit his appreciation, but also destroy his opportunity for progress and minimize his respect for his own efforts. While it is obvious that all work which children produce cannot be baked and fired, firing his best pieces will give the child a basis for evaluating his own achievements and establish a goal toward which he is inspired to strive.

In the primary grades, the child can learn to regard glaze as another form of painting, a magic paint that must go through fire to reveal itself. He can learn to apply the glaze with a brush or to dip the whole piece. Often an ambitious teacher glazes the child's work himself to certify good results. In spite of his good intentions, he is cheating the child of his inherent right to achievement for himself. Even if the results are imperfect, it is of greater value to allow the child the entire experience. In the elementary grades, the child can learn a great deal about different kinds of glazes, their behavior in the kiln, and the various methods of applying them, also the stacking and firing of the kiln. He can help mix and grind glazes (Plate L), help stack and unload the kiln, and witness the

Plate L

Mixing Glaze and Loading the Test Kiln reaction of glazes at different temperatures. He can also learn pottery decoration, especially the underglaze, slip decoration, and sgraffito work. These methods will be discussed in their place later.

The Young Craftsman as Ceramic Chemist and Artist

In the secondary school and on higher levels, the young artist can undertake the study of glazes more thoroughly with regard to both their aesthetic value and the chemistry involved. The changes occurring in the kiln need not be a mystery, but a definite science which can be mastered. The child can learn about the simple ingredients and make his own formulas. He need no longer depend on commercial products, or the glazes prepared by the teacher, but he can make his own. At this point the science department can help him to understand the chemistry of glazes and to carry on extensive experiments in making formulas and in firing. This association between art and science has been carried on in a few schools for many years and has enriched the value of both subjects for the student.

Glazes and Glazing

The subject of glazes and their making is too vast to be treated extensively here. It would require a volume to treat of them adequately, but we can give some idea of their importance and use even in this brief analysis of the subject. For fuller discussion of the subject the reader is recommended to authoritative books that treat glazes and glazing fully.[7]

Ceramics involves the making of pottery and glazes and is both an art and a science. To bring about the full value of the pottery experience each must be an inseparable part of the other learning. The artist cannot produce good glazes without the knowledge of the underlying chemistry, nor can the chemist produce beautiful glazes without the feeling and taste for aesthetic values. Lacking this necessary knowledge of chemistry, the young artist must proceed with the commercial or prepared glaze.

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[7] Charles F. Binns, *The Potter's Craft* (New York: D. Van Nostrand Co., 1910); Walter De Sager, *Making Pottery* (London: Studio Ltd., 1937); George J. Cox, *Pottery for Artists, Craftsmen and Teachers* (New York: Macmillan Co., 1913); Bernard Leach, *A Potter's Book* (London: Faber and Faber, 1940).

Literally, glaze is glass melted on the surface of clay. Each glaze is produced from a formula composed of ingredients which in the presence of heat form a glass. Glaze is colored by dyeing with oxides of metals or already prepared glaze stains. The metal oxides listed, roughly represent the following colors. Generally, copper oxide is added to produce green; cobalt oxide to produce blue; iron oxide to produce red or brown; uranium oxide to produce tan or yellow; manganese carbonate to produce purple or brown; and Naples yellow to produce yellow. The mixture of any one of these colors with another will produce still a different color, as in the case of pigments. The test of the colored glaze, however, is in the firing; its true color cannot be determined until it has gone through the fire. The various factors involved in the making of a glaze which affect its color, texture, and surface, are the selection of the ingredients, the proportion of the ingredients, the addition of the colored oxides, and the intensity and duration of heat. Any one, or all of these factors, may affect the quality of the glaze.

Different Types of Glazed Pottery

There are two kinds of glazed pottery. The first, called "once-fired ware," is first fired low in the biscuit simply to harden the pottery, then it is given a high-glaze fire so that the glaze and the body may become one, that is, so that there will be no line of separation between the glaze and the clay wall. Examples of this kind of pottery are porcelain, white and translucent, and stoneware, dark and opaque. The second kind is called "twice-fired ware." It is given a high biscuit fire and then a low glaze fire. Most art pottery comes in this class. China, white and translucent; earthenware, white and opaque. Most English and American china is in this class; majolica, which has a dark body with colored glaze; faience, whose dark body has a transparent glaze.

Different Types of Glazes

Glazes may be classified according to their surface:

Bright glazes, a high glossy surface, may be transparent and colorless, transparent and colored, or opaque and colorless, opaque and colored. Tin oxide added to a transparent glaze will make it opaque. In a transparent glaze, the color of the glaze is affected by the color of the body of the pot.

Mat glazes, with a dull, soft surface, are opaque glazes. A mat glaze can be produced by adding titanium oxide (rutile) to a transparent or an opaque glaze.

Intermediate or semi-mat glazes, between bright and mat, do not have a high gloss, nor a dull finish, but a semi-mat surface. A semi-mat glaze can be produced by adding titanium oxide to a transparent or an opaque glaze in less proportion than that required for a mat glaze.

Glazes are also classified according to their preparation:

Raw glazes, are made of ingredients ground together dry or wet, and applied to the piece. They may be ground with a palette knife on a stone or glass slab for small quantities, with mortar and pestle for larger quantities (Plate LI), or in a ball mill for very large quantities. These glazes when mixed with water and gum tragacanth to the consistency of thin cream may be applied directly to the pottery.

Fritted glazes.—Frit is a molten mass of borax or soda and other materials used in glaze-making which gives an unusual transparency and brilliancy to the glaze. Fritted glazes are those whose ingredients are melted together to form a glass, cooked and reground. This is done because of the presence

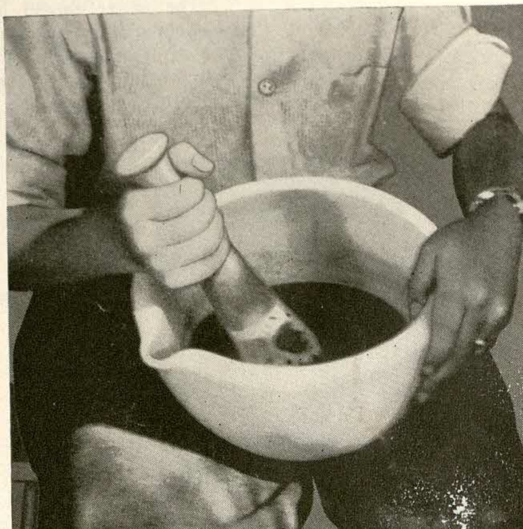

Plate LI

Grinding the Glaze

of certain soluble materials, as borax or soda, which are made insoluble by the fritting process. Fritting also reduces the firing temperature of a glaze. The ingredients must first be mixed together and melted in a crucible, then poured into cold water.[8] The hardened particles are ground or pulverized, and the completing ingredients are added, and the mass colored by the addition of metal oxides.

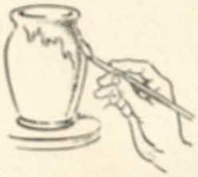

Figure 101

Ways of Applying Glaze

Painting.—Glaze may be painted directly on the object with a brush (Plate LII). The brush should be dipped full of glaze and applied quickly. The brush should be dipped again after each stroke (Figure 101). This method is very simple for young children and possesses several advantages: the thickness can be controlled better than when pouring or dipping, the colors can be blended with much greater ease and in a more interesting manner, and only a small quantity of glaze need be prepared.

Dipping.—This method requires a large quantity of glaze for the pot is to be fully immersed (Figue 102). The glaze must be well stirred before the pot is dipped so that all ingredients will remain suspended in the solution (Plate LIII).

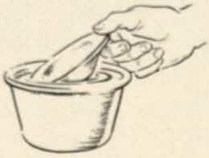

Figure 102

Pouring.—This method requires a large quantity of glaze, though not as much as the dipping method. Glaze is poured inside the pot and moved about and then poured out again. The pot is rested top down on two sticks laid across a container and the glaze poured over it until it is fully coated (Figure 103). In both the dipping and pouring methods the glaze must be scraped from the bottom, else the pot will adhere to the stilt or shelf in the kiln when fired. Care may avoid this necessity (Plate LIV).

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[8] The potter should have a crucible or frit furnace to do fritting properly and conveniently. The furnace has a small opening at the bottom through which the substance drips as it melts. The drops are caught in a container of cold water and solidify and break into small particles, thus facilitating the grinding. An assortment of frits—lead, boracic, etc., can be bought from Harshaw, Cleveland, Ohio.

Plate LII

Applying Glaze with a Brush

Spraying.—In spraying the glaze should be thin so as to pass through the gun. The piece is set up on a block and sprayed all over evenly in the manner illustrated in Figure 104. This method is especially recommended for applying glaze over decoration, and for transparent glazes.

Other points to be considered in the application of glaze are: A mat glaze must be applied more evenly and more carefully than a bright glaze, since it will not run together so much or fill imperfections. Transparent glazes must be applied more carefully than opaque glazes; and for transparent glazes it will be found that the best results come from spraying. A very smooth glaze is more difficult to put on than a medium coarse glaze.

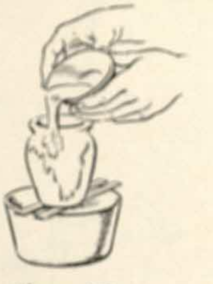

Figure 103

Firing Glazed Pottery

A glaze oven is stacked quite differently from a biscuit fire, and the stacking must be carried out with greater precaution. The shelves and bottom of the kiln should be painted with sagawash (composed of one-half flint and one-half china clay), so that the spilled-over glaze from the pots can be easily removed by chipping it off with a chisel. Each pot must not touch any other piece and must be set on a stilt so that it will not stick to the shelf.

In high firing, considerable distance should be left between pieces, as a quantity of glaze is liberated in the intense heat and a dark piece is liable to stain a lighter one if they are close together. Hard glazes should be packed first, at the back of the kiln, as the back is always hotter than the front, in an updraught kiln. The glaze kiln will always accommodate fewer pieces than a biscuit kiln, but a considerable number may be packed with careful planning. The cones should be placed in the center of the kiln within sight of the spy hole and the door shut and sealed with clay. In firing the kiln, the heat should be increased gradually, lighting one or two burners at a time. The cones will indicate the intensity of the fire.

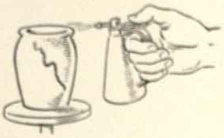

Figure 104

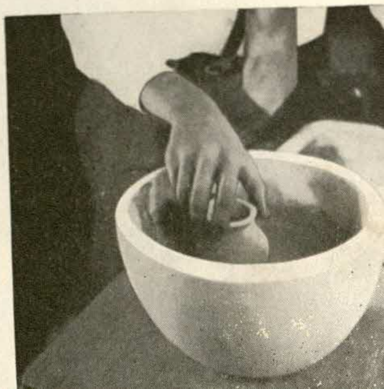

Plate LIII

Applying Glaze by Dipping

The Pyrometric Cones

Pyrometric cones are made of various materials which melt at various temperatures (Figure 105). In placing cones for firing, it is wise to put two or three cones in the kiln, one which will melt at the temperature at which the glaze is to fire, and another which will melt at a lower temperature, and a third which will melt at a higher temperature. When the lower cone drops, one should remain near the kiln and watch for the higher cone to begin turning. Just as the cone at the higher melting point begins to bend, the heat should be turned off and the kiln allowed to cool.

The number of a cone represents a specific melting point, for example, cone 022 melts at about 112° F; cone 1 at about 2012° F; and cone 17 at 2696° F. Pyrometric cones are numbered from 022 to 01 in the low fire series and from 1 to 36 in the high fire series. The following wares are fired at approximately the following cones: soft enamel at cone 022, soft to hard glazes at cone 1, stoneware from cone 7 to 10, porcelains from cone 10 to 17. In firing for school work cones 05 to 01 should be used for glaze firing and 06 for biscuit firing. For ordinary terra cotta or red clay biscuit firing use 06, for glaze 06-04. Biscuit ware should not be fired too high, to prevent vitrifying, but it should be fired higher than the glaze to be used on it or else it may cause the glaze to crawl. This is one of the commonest causes for crawling. If the clay has become vitrified, the glaze will be difficult to apply or cling to the surface. The clay needs to be left porous so that it will absorb the glaze.

The kiln should be thoroughly cool before it is unstacked, or even before the door is opened. The cooling process requires considerable time. A little experience with firing will demonstrate to the artist the process of operating the kiln. Any lumps of glaze sticking to the base of the pot should be ground down on the emery wheel.

Plate LIV

Pouring Glaze

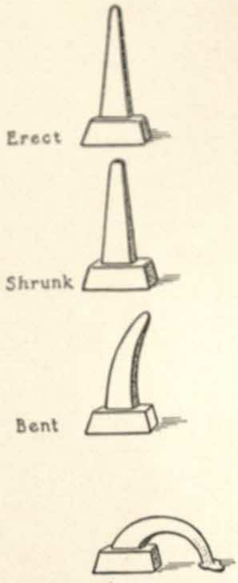

Figure 105

Pottery Decoration

Decoration can either enhance or destroy the beauty of a form. If it is used, it must be applied with the same thoughtfulness and feeling that controlled the designing of the form. So many pleasing objects in the work of craftsmen and students are ruined by their decoration that one is inclined to advise against its use, and to recommend, if the form is good, to leave well enough alone. This is at least a sound rule for the artist to follow when his form seems complete in itself. There are times, however, when shapes are enriched by patterns, or demand their use. When this need is apparent, the artist should study his piece well and use the most appropriate decoration from the standpoint of the design of the object. He will adapt the decoration to the structure, shape, size, and character of the piece. However, since this problem is fully discussed in a later chaper, "The Child as Craftsman and Designer," we shall not discuss it here.

Incised and Relief Decoration.—The worker is cautioned not to choose an elaborate design, as over-decoration may mar the beauty of the piece. It is well to consult primitive pottery for good examples. Incised relief decoration should be applied to pottery while the clay is still damp, which the potter calls the damp state. Incised decoration is done by cutting shallow lines or shapes into the surface with a tool. A sharpened stick, modeling tool, or a wire tool may be used. This process is an easy one and may be executed by very young children, provided that the design is simple, and is especially suitable for the primary and elementary grades. Relief decoration is applied to the surface, standing from about one-eighth to one-fourth inch from the body. The design is put on by first tracing it on the pot, then scoring and painting it with slip, and finally modeling the raised parts with fresh clay. This process requires more care and skill than the first method and should be carefully studied. Relief may be done in the elementary grades and on the higher levels.

Painted Decoration.—Painted design is the most simple and widely used method for pottery decoration. A great amount of this kind of design is found in the primitive or ancient arts, for example, the Egyptian, Greek, Roman, and our own American Indian.

Underglaze Painting.—Underglaze painting may be applied to the green ware with either underglaze or color medium under glaze colored slips; in biscuit ware with only underglaze color medium. Underglaze colors have a flat finish, but a gloss may be obtained by putting a transparent glaze over them. Underglaze color medium is made as follows: underglaze colors (which may be purchased from a ceramics dealer)[9] should be ground on a glass slab with a spatula, adding a few drops of gum tragacanth and water to form a thin paste. Underglaze colored slip (also purchaseable from a ceramics dealer) is made by grinding underglaze color with water, a few drops of gum tragacanth, and a little white clay slip. Each is applied to the body of the object with a soft brush. When the underglaze is applied to biscuit ware, the transparent glaze may be sprayed over it and only one firing is necessary. If the glaze is applied to the green ware (Plate LV) and fired, the transparent coat is sprayed or poured over it and fired again. This operation requires as many fires as the first method and is preferred by many potters. Sometimes the green ware, the underglaze colors, and transparent coat are all fired at once, but this process requires skill and special preparation of the glazes. Underglaze pottery may also be beautifully finished simply by rubbing it with a good wax and not using an overglaze.[10] Most Indian pottery is finished in this way. Young children of varying ages, from primary through elementary school, may use this process, and students on the upper school levels may use it in more elaborate designs.

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[9] Inwood Pottery Studios, 503 West 168th Street, New York City; B. F. Drakenfeld & Co., Inc., 45 Park Avenue, New York City.

[10] Johnson's Floor Wax (paste, not liquid) is satisfactory for the purpose.

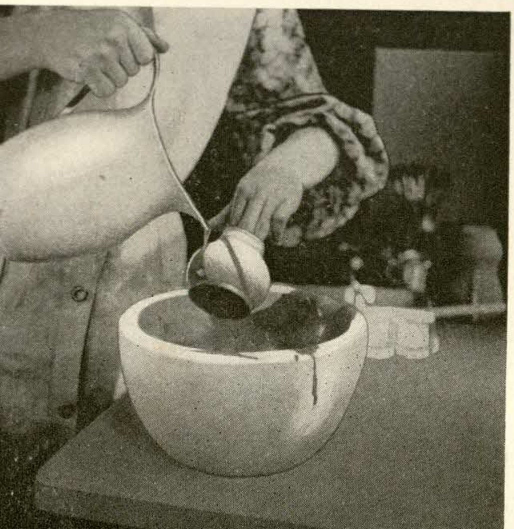

Plate LV

Pouring Glaze

Slip Decoration.—Decoration may also be added with various natural clay slips. Natural colored clays may be procured and ground in a mortar, then mixed with water to form a thin creamy paste and painted as already described. It is best to apply the color while the pot is leather hard, or as soon as it can be handled without damage to the shape. Because of the limited number of colored clays, the variety of color is not as extensive as the underglaze, but buff, black, red, and white may be procured. Many of the Greek vessels were made by this method. The process can be varied by entirely covering a pot with one colored slip and then, when it dries, painting a design on with another slip.

Sgraffito Decoration.—The scratching method, which was extensively used by the Italian potters, is called "sgraffito," meaning scratched. A colored slip is put over a pot in the biscuit or green state and a fine design is scratched through the slip so that the body color will show through. Many exquisite examples of Italian work can be found in most museums, or good reproductions may be procured from dealers.

Summary

The methods of decoration discussed are all within the power of the young artist. It is advisable, however, that the simple, painted methods be employed with young children, and that they be permitted to work spontaneously with brush and glaze and do not toil over designs or attempt imitation of finished pieces. The older student can work out his designs more carefully, planning them in advance and drawing them on the pottery before he paints or incises them.

The young artist should always assume an exploratory attitude toward his craft, trying out new forms, new clays and glazes, and noting the results from the fire. There is much to be learned at the door of the kiln, both from success and failure. The true artist regards it as a mine from which come objects of rare beauty. Indeed, greater treasures have come from it than from any mine of precious metal.

Chapter Six

The Child as Graphic Artist

The Graphic Arts Present New Media for Learning the Art Values

Line, form, and color are the basic elements of art, and it is through a study of them that one develops an appreciation of all arts. Therefore, the more the young artist learns to use these elements in new creative experiences, the greater will be his understanding of them. The graphic arts present an opportunity for such experiences in novel and intriguing methods and media which appeal to young students because they combine mechanical and creative processes. For example, in making an etching the young artist can learn to use fine, sensitive line in addition to mastering the thrilling art of etching and printing. If he works directly on the plate, feeling and studying his line as he goes, he combines both the technical method and the creative expression in the same experience. Thus, technique and skill have a proper relation to the originative act. By similar emphasis on the mezzotint, the aquatint, the lithograph, and other processes, the student may acquire a knowledge of form. Of course, the teacher will have to be careful to introduce these processes as a stimulation to creativeness and not as ends in themselves.

The Graphic Arts Appeal to Adolescents

The graphic arts should be especially interesting to adolescent boys and girls because of the strong desire of youth to acquire skills and techniques. These arts present new media, tools, and techniques which appeal to the young student's taste and are suited to his abilities. They promote good working habits and keep enthusiasm and attention at a high pitch because every step in the process is exciting and demands the fullest and best use of the individual's powers. The student of the graphic arts gains the power to evaluate his own work, since he can see immediately the results of every move he makes. For example, in an etching, a poor or weak line will show up in the print, a careless ground will break down in the acid, bad wiping will show up in dirty smudges on the print.

The good worker, therefore, will check up every move he makes with himself and his teacher and, after the print is made, he can analyze it and discover his errors. This practice is the best kind of discipline for the student or the artist, because it comes from the individual's own realization and discovery. It is self-discipline.

The graphic arts will also prove to be a very successful medium for older adolescents of senior high school age, as they satisfy the adolescent desire for acquiring professional results. The more intricate processes, the aquatint, the mezzotint, and especially the lithograph, will appeal to them and be better suited to their advanced powers. These processes are discussed at greater length later in the chapter. It seems unwise to teach the graphic arts discussed in this chapter in the lower grades because of the complex methods involved and the reduced scale of working. Their application at this age may prove a hindrance to creative expression and may result in the development of tight methods of working and in the production of small, trifling drawings.

Sometimes etching may be taught to children in the fifth and sixth grades if the teacher is careful to select large subject matter and encourage free, flowing lines and spontaneous technique, but the dry-point seems too stubborn a process for little fingers to cope with successfully; while the aquatint and lithograph are processes far too complicated and advanced to be mastered by young children. But there may always be exceptions at any age.

Graphic Arts Processes

The graphic arts discussed in this chapter include hard and soft ground etching, dry-point, aquatint, mezzotint, and lithography. Linoleum and woodblock printing are not included because they are more commonly known than the other processes and discussion of them may be found in many books on the subject. It must be remembered, however, that they are excellent media for developing simple line and dark and light consciousness, and should have their place in any program of the arts. They present an excellent introduction to the more advanced arts of etching and lithography and possess the same values for the development of the aesthetic sense and the acquisition of skill and technique. They may, therefore, be used to great advantage in the lower grades.

Graphic Arts as an Educational Vehicle

While most of the graphic arts are centuries old, their use in the education of the child-artist is comparatively new. Their value as an educational vehicle lies in the experience of creative expression and the development of aesthetic values which they provide, not in the mechanical processes which they teach or in the professional results which the student may achieve.

For this reason, the aim of the professional etcher and the child will differ entirely. The etcher will be concerned with etching quality and perfect printing, while the child will be interested in a new, thrilling process in art to which the resulting print will be secondary. Even if the child does not produce a print which is considered worth framing, he will have enjoyed valuable experience in the use of line and light and dark, and he will have acquired new kinds of skill and developed a certain degree of consciousness of form and become acquainted with valuable habits of discipline.

Teaching Line Through the Etching Process

Significant and Imitative Use.—The first object of the graphic arts is to develop line consciousness in the young artist. Line may be used either imitatively or significantly. In the imitative use of line, the child records what he sees literally. He has no other aim than to reproduce the object as photographically as he beholds it. His work is neither personal nor inspired; it is purely mechanical and skillful. There is little of the self or the individual in the experience, which means that the child's powers are only partially functioning. The stimulus does not come from an inner urge to express something that the child has to say, but from an external standard acquired by the child, to produce naturalistic or realistic results. In short, it is an instance of mere representation and not creation, since the originative and personal factors do not function in the experience. The child is deprived of the privilege of being his creative self or of using his own power of interpretation. As he continues to practise this method of drawing, he becomes more dependent on the object and his results are more formal and stereotyped.

On the other hand, in significant use of line the child presents what he personally sees and feels about the object. He does not imitate, he interprets, as may be seen in Plate LVI. He puts down only those lines which seem to him indicative and expressive of that object. He does not use his outer eye, which merely copies, but his inner eye, which discerns, selects, and changes according to a well thought out objective.

Let us compare the method of working in each approach. The child who is imitating puts down all he sees to produce naturalistic or realistic results. In his effort to be accurate, he records every little detail, every line and facet. As a result, his drawing becomes confused, and he continues to add details until he has lost his first spontaneous impression.

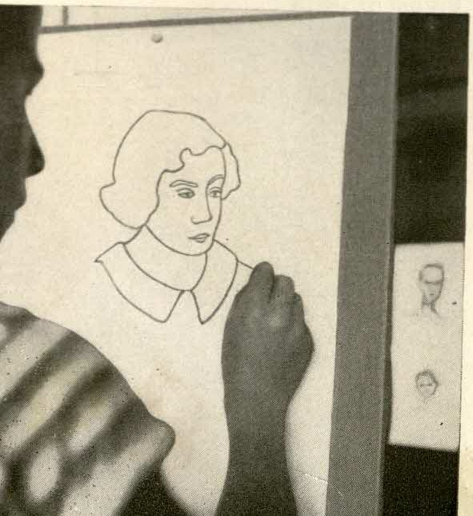

Plate LVI

Contour Drawing
Using Significant Line

The child who works with significant line, however, first learns to see his subject as a whole and to choose only those lines which seem most significant in interpreting its character. He avoids all details that do not emphasize the character of the whole. He uses fewer lines; he thinks more and looks harder; he works with feeling as well as with skill. Since he is interpreting his own point of view, he sees and works differently from his companions. A character may impress him as weak or delicate, while it may impress his fellow artist as strong and virile. He is developing not only skill in drawing, but also the power to see and express his own point of view.

While there are many media for developing line sensitiveness, etching presents one of the most promising of these media since it is the art of line. The quality of line, its directness, its crispness, and its rhythm, signifies good etching. The child-artist, therefore, must be keenly conscious of and acutely sensitive to this use of line all through the etching experience.

In discussing the etching process, it is important to consider the technical features as subordinate to the aesthetic experience, but not as incidental, since the technical features develop the necessary discipline and good working habits and inspire the enthusiasm for the experience.

In drawing, the child should work directly on the plate with free, flowing lines and careful vision. Since no line can be changed or erased, the young artist will have to be alert all the time in choosing the lines he is to put down and in putting them down as carefully as possible. At first it is best for him to work in single, direct line, dealing with contours and shapes of objects and avoiding any shading or texture. In this way he experiences the dynamic quality of line, and form may be expressed through line. All lines show up in the plate, hence the young artist will see both his mistakes and his successes and in the light of them will be able to evaluate his results.

Plate LVII

Working Directly from Life

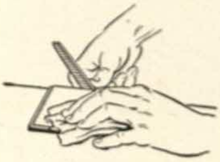

Figure 106

It is excellent discipline for the child to work directly from life, making portrait or figure studies of his classmates (Plate LVII), or depicting familiar scenes. In the more complete compositions, the child may find it helpful first to make a composition on paper or to have a preliminary experience in line drawing with pencil or pen and ink, but any methodically worked out picture which is copied from another drawing or from life merely for the purpose of etching, destroys the educational value of the experience.

It is important to emphasize that real line experience requires strict discipline of the eye and the hand. The artist must keep his eye more on the object than on his picture, and must constantly relate each line he makes with the form he wishes to express. He must develop real concentration and an economy of line expression.

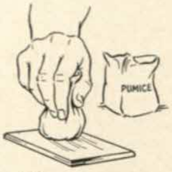

Figure 10

The Etching Process

There are two types of etching—the hard ground etching and the soft ground etching. The hard ground etching is the better known type and will be discussed first.

The Hard Ground Etching.—The first step in making the hard ground etching is the preparation of the plate. Copper or zinc plates are used, which may be purchased in various sizes. Zinc plates are more economical and practical than copper ones for school use.

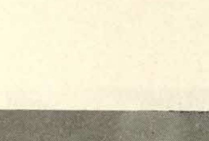

Figure 108

A plate must first be bevelled to prevent cutting the paper or blanket in the printing (Plate LVIII). The plate should be held with the left hand and supported at an angle against the edge of the table. It should be held with a paper or cloth, as perspiration from the hand will blemish the surface. Then a flat file should be drawn across the edge repeatedly with the right hand until a good bevel is produced (Figure 106). This process is repeated for the four edges of the plate. The face of the plate is then cleaned with a small wad of wet cotton dipped in pumice powder and rubbed across the plate in

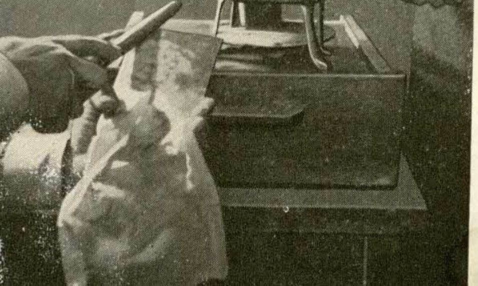

Plate LVIII

Beveling the Edge of Plate with File

consecutive, even strokes, all in one direction (Figure 107). The plate must be washed under running water until every particle of pumice is removed. The hand must never touch the face of the plate. The plate is allowed to dry, but should not be dried with a cloth or paper as lint particles will injure the ground. The ground is a wax preparation put on the surface of the plate to protect it from the acid, and through which the drawing is made. There are two kinds of ground, hard and soft, the hard being used for hard ground etching, and the soft for soft ground etching. A hand vise is fixed in a corner of the plate to hold it while the ground is being applied. A piece of paper or blotter should be fixed between the jaws of the vise and the plate to prevent injury to the plate (Figure 108).

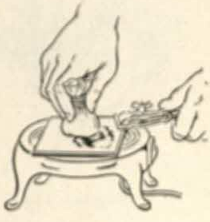

Figure 109

As the next step, the plate is warmed on a jigger, which is merely a stove with an iron plate over it. An ordinary electric hot-plate will serve for small etchings. A small quantity of hard ground is applied to the plate by merely smearing the ground across the plate. If the ground is wrapped in China silk, it will disperse more easily and last longer (Figure 109). Etching ground can be purchased from an art supply store, or the artist can make his own.[1] It should now be smoothed with a dabber or a roller (Plate LVIII). A dabber can be made by wrapping lamb's wool in a piece of kid (an old kid glove will serve perfectly) and binding the top with cord. The ground is spread evenly by patting the surface with the dabber while the plate is resting on the warm jigger (Figure 110). If a roller is used, the surface is first rolled in one direction, then in the opposite direction, until the ground is smooth (Figure 111).

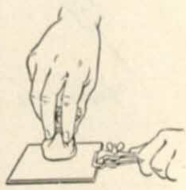

Figure 110

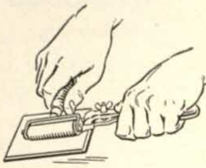

Figure 111

The ground must now be smoked so that the lines of the drawing can be seen through it. Holding the vise and the plate in the left hand, shoulder high and face downward, and a candle in the right

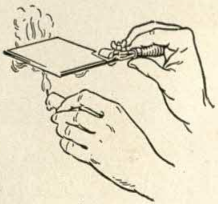

Figure 112

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[1] Etching ground is made of 1 ounce white beeswax, ½ ounce mastic (tears), ½ ounce Egyptian asphaltum. The mastic and asphaltum are ground separately. The wax is melted over a low fire and the gum mastic and asphaltum added slowly, the mixture is stirred the while, and then poured into a pan of warm water. The ground will solidify in a mass. This is dipped out and kneaded into a ball. This ball constitutes the ground. It should be wrapped in Chinese silk and bound at the top.

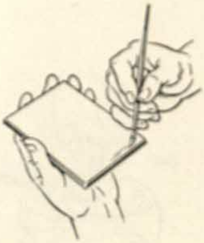

Figure 113

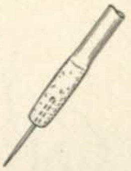

Figure 114

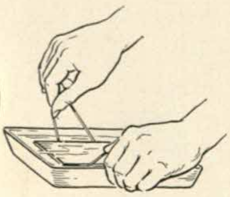

Figure 115

hand, the artist passes the flame back and fourth across the surface until it is dark (Figure 112). The flame, but not the wick, may touch the plate. If the candle is held horizontally it will give off more smoke and speed up the process. The plate must be kept warm during smoking, otherwise the surface will become sooty. If a sooty spot appears, it may be removed by re-heating the plate on the jigger. When cool, the plate may be removed from the vise and the edges and back painted with stopping-out varnish, care being taken to cover the exposed places left by the vise (Figure 113). The varnishing process prevents the acid from eating the back or edges of the plate. A stopping-out varnish can be made by pulverizing lump asphaltum and dissolving it in benzol. A quantity of this solution can be made at one time, but it should be kept sealed as the benzol evaporates easily.

The plate is now ready for drawing with the etching needle. Such a needle can be improvised by driving an ordinary sewing needle into a penholder. The ferrule of the pen should be broken or cut off and the needle gripped firmly in a vise, point down. The penholder is driven upon the needle by tapping it with a mallet. The needle is now completed and ready for use (Figure 114).

Etching the Plate and Printing.—The artist draws directly on the plate with a free stroke, using almost as much pressure as he does in writing with a pen. There should be no attempt to cut into the plate, that being the work of the acid. The drawn line will appear silvery through the dark ground. When the drawing is completed the plate is ready to etch. The etching bath is made of a solution of six parts of water to one part of nitric acid.[2] The plate is gently immersed in this bath and allowed to stand four or five minutes, more or less, depending on the reaction of the acid (Figure 115). The young artist must avoid getting his fingers into the bath or splashing it on himself or his companions, as the acid will burn the skin or clothes. As the bubbles appear on the lines they should be brushed away with

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[2] If a quicker reaction is desired, a stronger solution of the acid should be made, as one part of acid to four parts of water.

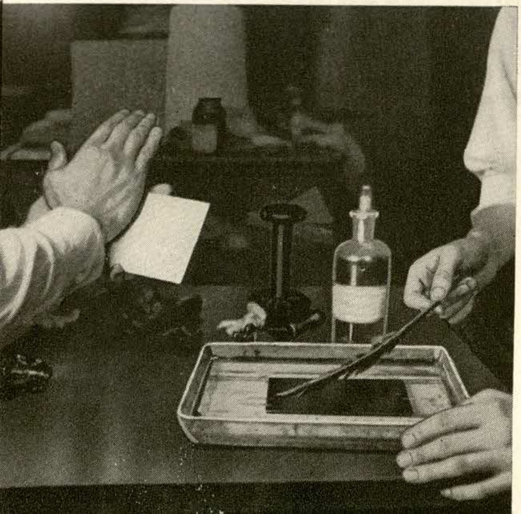


Plate LIX

Wiping Plate with Hand Wipe

Etching Plate and Removing Bubbles with Feather

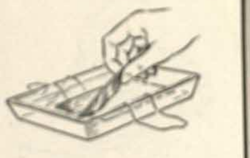


Figure 116

a feather to prevent ragged lines from developing (Figure 116). The depth of the line may be tested with the etching needle. If the line is found to be deep enough to hold the needle, it is deep enough to print.

After the plate is removed from the bath, it must be washed in water and the ground and asphaltum removed by rubbing the plate with cotton or a rag saturated with benzol or turpentine. Now the etching is ready for printing. The plate is held on the warm jigger, and a small quantity of etching ink (not printer's ink) is applied and spread out with a leather roller or an inker (Figures 117 and 118).

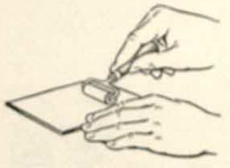


Figure 117

An inker is made by rolling a strip of felt about eight inches wide and twelve inches long into a cylinder and binding it with a cord. Inkers may also be purchased at an art supply store (Plate LX). The inker is held in a vertical position and the ink is spread with the end of the inker by using a rocking motion forcing the ink into the lines (Figure 118). This method is more effective than the roller method.

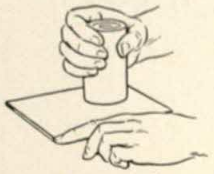


Figure 118

When the plate is thoroughly covered, the wiping begins. It is an important part of the process and must be done carefully. This process often seems to be a waste of effort to the beginner because all of the ink is removed in the wiping. The purpose, however, is to remove the ink from the surface but not from the lines. The ink is wiped off with tarlatan or curtain material (Figure 119). The plate is held in the left hand and wiped with the right. It is essential to get the surface clean, without wiping the ink out of the lines. The operation is repeated with a piece of unbleached muslin. This process is called the rag wipe (Plate LX). The rag wipe may be followed with a hand wipe, which the artist administers by holding the plate in the left hand and sweeping the surface briskly with the right hand, beginning at the top and working toward the bottom in parallel strokes (Figure 120 and Plate LIX). The hand wipe produces a light print. If the artist prefers a dark print, he can obtain it by using only the rag wipe.

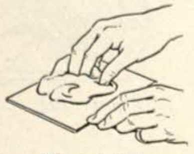


Figure 119

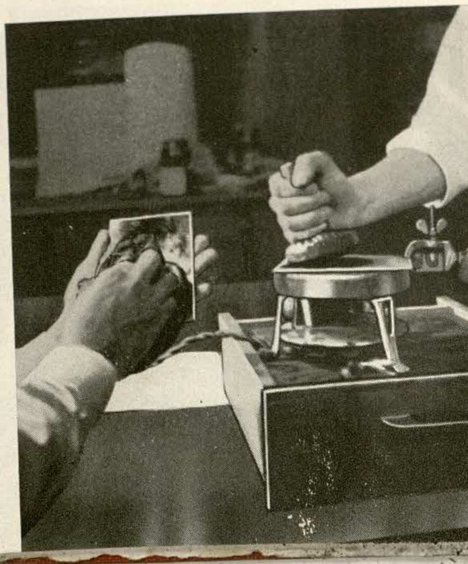


Plate LX

Using the Rag Wipe

Inking Plate with Leather Inker

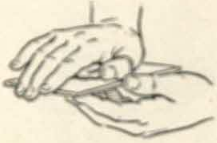


Figure 120

Etching paper should be used for printing, ordinary white drawing paper will do. The paper should be torn into the desired sizes and placed in water to soak a few minutes, then put between blotters and pressed under a weight. An etcher who expects to make many prints often prepares his paper the night before his printing. If the plate has cooled it must be reheated before printing in order to soften the ink in the lines, and then placed face up on the bed of the press. The bed is the large iron plate moving between the rollers. The sheet of damp paper is laid over the plate and the etching blankets, three in all, are brought gently down upon it (Plate LXI). These blankets are made of three grades of piano felt, heavy, medium, and light. The light blanket is placed next to the paper. The bed is then slowly moved between the rollers, which are adjusted to give great pressure, and when the plate comes out on the other side of the rollers the print is finished (Figure 121). The great pressure of the rollers has forced the wet paper into the etched lines and drawn the ink out of them. When the print has been gently peeled from the plate, it is allowed to dry. The plate must be inked and wiped for each print. If a print is to be kept for framing or exhibition purposes, it should be stretched on a drawing board and taped along the edges with gummed paper and allowed to dry taut (Figure 122). When dry, the paper is cut away and the etching lifted out. It may then be matted for exhibition. The metal plate should be rubbed with oil or covered with a ground if it is to be used again.

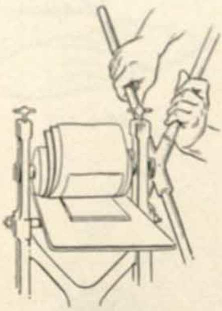


Figure 121

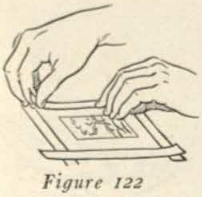


Figure 122

The Soft Ground Etching.—The soft ground etching is not as well known as the hard ground etching, but it presents equal possibilities for aesthetic experience. Some students may find it an easier medium to work in than the hard ground since the lead pencil is used instead of the etching needle. Those students who have had previous experience with line study in pencil work, will find soft ground etching especially interesting and successful, and it furnishes for all an added experience in line.

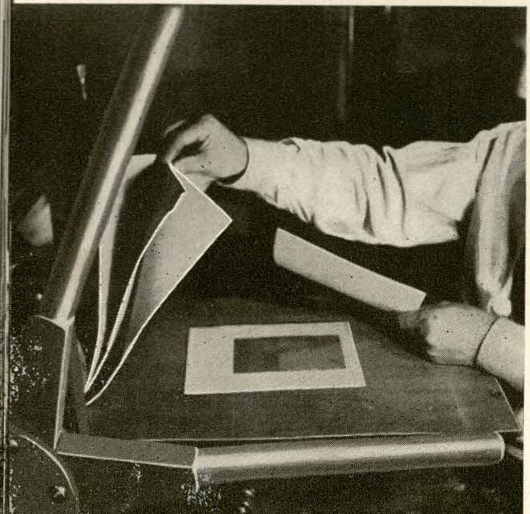


Plate LXI

Printing: Showing the Three Blankets, the Plate Face up on the Bed, and the Paper Ready to Set on the Plate. The Paper Underneath the Plate Keeps the Bed Clean

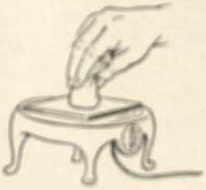


Figure 123

In the beginning the plate is bevelled and cleaned with pumice just as for the hard ground etching. Then the ground is prepared by adding one-half the quantity of hard ground to one-half pure tallow. These materials are heated on the jigger in a small metal container such as a salve box, in order to melt and mix the ingredients, and then the mixture is allowed to cool until it becomes a paste. A small dab is put on the plate and spread evenly over it with the dabber in light, patting strokes. The plate need not be held in a vise, but may lie on the jigger as the ground is applied (Figure 123). It should then be removed and permitted to cool. A piece of tracing paper, about one-half inch larger on all sides than the plate, is cut, the plate is laid face down on it, and the edges are brought over and glued to the back (Figure 124).

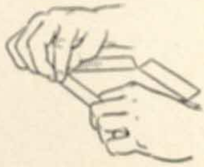


Figure 124

The drawing is made on the face of the plate with a sharp, medium soft pencil. The same attention to feeling and expression of line should be given as was given to the hard ground etching. When the design is finished, a razor blade is run along the edge of the plate and the paper is carefully peeled off (Figure 125). The pressure of the pencil while drawing on the paper has removed the ground and left the plate exposed so that the drawing appears in light silvery lines through the ground. The edges and back of the plate are painted with asphaltum, and the plate is etched in a mild solution of nitric acid for a brief period of two or more minutes. The process of inking and printing is the same as that for the hard ground etching illustrated in Plates LX, LXI, LXII.

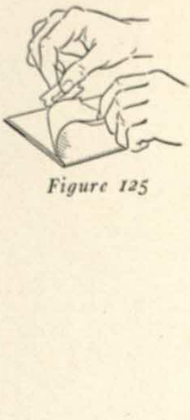


Figure 125

The line quality of the soft ground etching is soft and pencil-like, while the hard ground etching gives a sharp, pen-like line. Both furnish different experiences and interesting results.

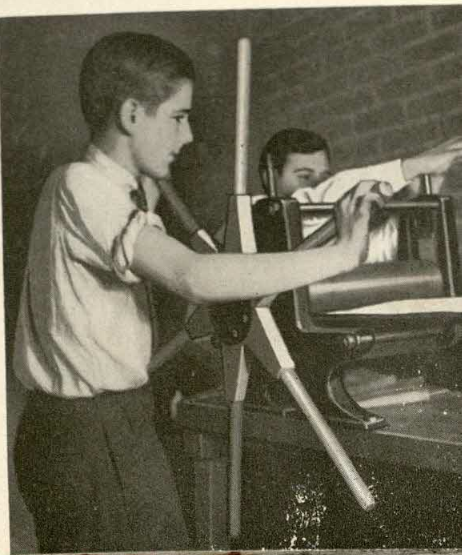


Plate LXII

Adjusting the Pressure and Running the Plate through the Press

The Dry-point Process

The dry-point process offers equal opportunity with hard ground and soft ground etching in the study of line. While it is often classed under etching, it is not a true etching process because no acid is employed. The artist works on the plate with a dry-point needle, and the print is made directly from these lines without acid biting. Because the process is much simpler and requires less equipment, in many schools the dry-point is a more practical medium than etching. Furthermore, it adds another experience to the study of line and should be included in any course in graphic arts. This medium requires a more deliberate manner of working than etching and it promises greater success if the young artist has had some previous experience with line. A pencil study of the composition may be made, then copied upon a zinc plate with a lithographic pencil. The drawing may also be traced by blacking the back with lithographic or sanguine crayon. The young artist may, however, work directly on the plate if he is sufficiently daring (Plate LXIII).

The zinc or copper plate is first bevelled, but not cleaned with pumice, and the drawing is made directly on the plate, or traced. The cutting of the lines is done with a dry-point needle, which is much stouter than an etching needle. In cutting or scratching the lines, the needle is held slantwise, like a pencil. Its action raises a burr which holds the ink. The artist regulates the blackness and thickness of his line by the depth of the scratch, bearing down hard for the black lines and pressing gently for the light lines. He can then rub lamp-black oil paint into the lines of the plate as he proceeds, as a means of testing the color of his lines, but it should be washed out with turpentine before the printing is done.

When the cutting is finished, the surface of the plate is cleaned with whiting in the same way that the etching is cleaned with pumice. The plate is inked, then cleaned with a rag wipe and finished

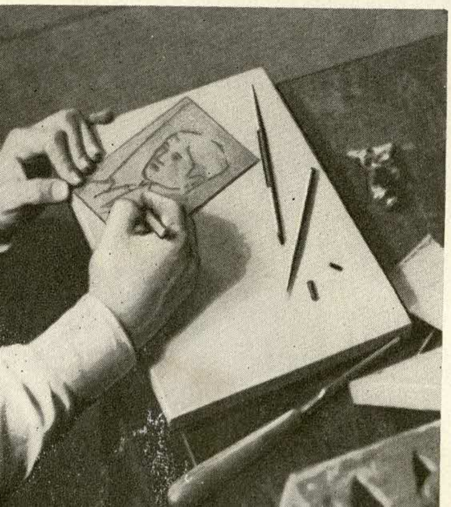


Plate LXIII

The Dry-point Drawing on the Plate with the Dry-point Needle (Two Kinds of Needle are on the Board) with a hand wipe, using the palm of the hand in one direction. The process is similar to that described in etching. After the print is made, the artist will recognize a great difference between dry-point lines and etching lines. Etched lines print sharp and clear and are all uniform, because of the fact that acid bites all lines evenly. Dry-point lines are blurred and uneven in value. The blurred effect is caused by drawing the ink out from the "burr" or cut in the wiping. The uneven value is due to the fact that the lines have been cut at different depths and hold varying quantities of ink. The young artist will be able to detect without difficulty the difference between etchings and dry-points by these characteristics.

The Aquatint Process

Children often have difficulty in understanding dark and light value underlying color, because color is so attractive in itself that it confuses the sense of value. On the other hand, common teaching methods of developing the concept of value through the making of value scales and color wheels tend to block the originative powers of children and to destroy enthusiasm for art work. Even the painting of pictures in dark and light values in oils or water colors, or the making of charcoal studies, becomes boring to the child if it is overdone. The graphic arts, which are an ideal medium for studying value, present a desirable change of experience and help to deepen the student's concept.

The graphic arts may also serve as a means of developing the concept of black and white values. The aquatint process provides an excellent means for studying value because, both mentally and visually, the child experiences the concept as part of an originative activity. He gains the intellectual experience because he must know in advance of the printing the exact number of tones of the values he desires, and he acquires the visual experience when he sees the results in the print. The print, therefore, substantiates his judgment. This concept is the transitional step between the perception of line and the percep-

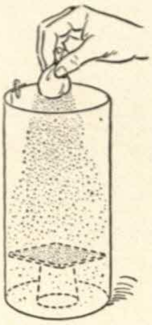


Figure 126

tion of form, since in the aquatint only the flat values of white, gray, or black are possible and no modeling appears.

The aquatint, then, is a process of etching by which flat tones or values are produced by a special ground without the packing of many lines. A zinc or a copper plate may be used and the plate bevelled and cleaned with pumice powder. The etching is produced through a resin ground which is prepared as follows: lump resin is pulverized by crushing it inside of a paper or cloth with a bottle or rolling pin. A small quantity of resin is put into a piece of cheesecloth which is tied at the top. Over the cheesecloth a piece of China silk is wrapped and tied. The contents must be loose so that when the bag is shaken a fine resin dust will sift through. The plate is rested horizontally on a low object, such as a box or a can, about six inches above the table.

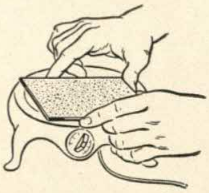


Figure 127

A large paper cylinder is made by rolling a heavy paper or cardboard and fastening it with paper clips or fasteners. The cylinder should be about twenty-four inches tall and wide enough to fit conveniently over the plate. After the cylinder is put over the plate, the resin bag is gently shaken over it so that a fine dust sifts down (Figure 126). The cylinder is employed to assure even distribution of resin dust over the plate. The student may stand on a chair if the top of the cylinder is too high for him to reach, or he may place the plate and cylinder on a stool. If the cylinder were not used, ordinary drafts and breezes would blow the resin dust and make an uneven surface. Only a small quantity of resin should be shaken into the cylinder and a few minutes allowed to pass to permit the dust to settle. When the cylinder is removed, the plate should have a thin, even layer of dust.

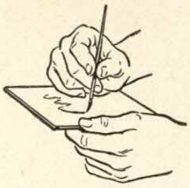


Figure 128

The plate is carefully placed on the warm jigger without touching or disturbing the surface (Figure 127). A slight jar or breeze would destroy the surface. When the plate is sufficiently warm the resin particles will melt. As melting takes place the resin particles, which look dry and white like sawdust, will suddenly appear wet like tiny drops of glycerine, and at the same time a little smoke will rise from

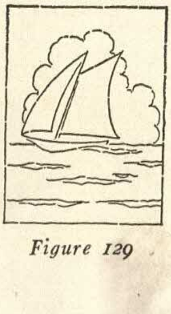


Figure 129

the plate. At the second that this reaction takes place the plate should be removed, for the surface will be ruined if it is allowed to remain over the fire too long. If one end of the plate shows the reaction before the other, it should be immediately swung around to permit the ends to melt evenly. The plate is allowed to cool, and if inspected through a magnifying glass it will show the drops of resin side by side, like little hills. The etching is done in the open valleys between the hills. When the plate is allowed to become too warm, the hills all run together and leave none of the plate exposed for the acid to act upon in the etching. The edges and the back of the plate are painted with asphaltum to protect them from the acid. The plate is now ready for etching. The drawing may be painted directly on the plate with asphaltum or first traced (Figure 128).

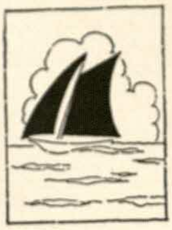


Figure 130

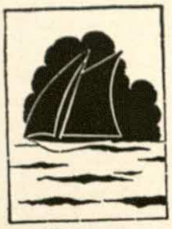


Figure 131

We shall discuss a simple example of the etching process in order not to confuse the reader. Let us suppose that a student had made a composition of a sailboat against the sky with a cloud in the sky. He has indicated that he wishes to have the sail white, the cloud light gray, and the boat and water black.

He first traces his drawing on the prepared plate with carbon or graphite paper (Figure 129). Since he desires the sail white, he can paint in the whole sail with asphaltum to protect it from the acid (Figure 130). He then immerses his plate into a dilute solution of nitric acid, about one part acid to six parts water, for about five seconds. He removes and washes the plate in a pan of water and allows it to dry. The short period in the acid should slightly etch the plate so as to give a light gray when printed. The child now paints the cloud and whitecaps of the waves with asphaltum, which the etcher calls "stopping out" and, after the varnish is dry, the plate is returned to the bath for about ten more seconds (Figure 131). It is removed, washed, and dried as before and the entire sky "stopped out" with asphaltum (Figure 132). The plate is again put into the acid for an approximate ten more seconds, then washed in water. More bitings may be carried through for the variations in the water.

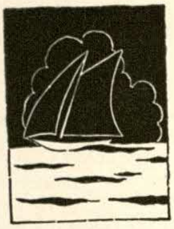
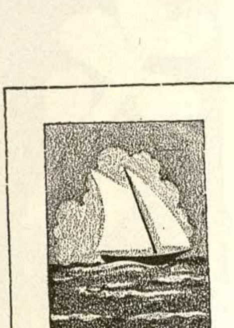


Figure 132



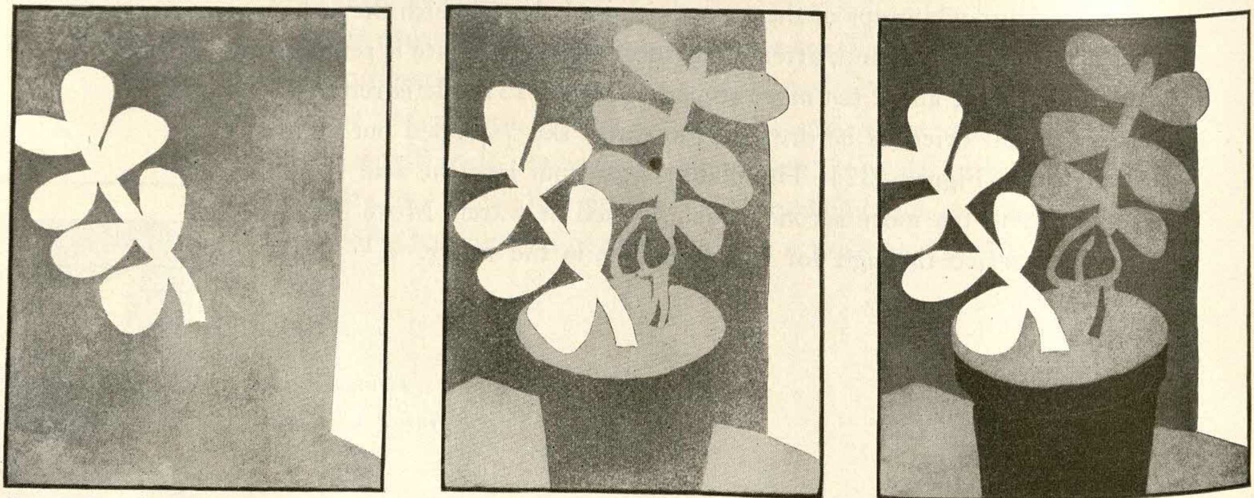
Finished Print
Framed with Mat

Figure 133

During the biting the bubbles should be brushed away with a feather just as was done in the etching. The plate must be cleaned with benzol to remove the asphaltum and the resin ground, and it is then ready to print. It should be inked in the same manner as the etching was inked, wiped with a hand wipe, then printed. The print will reveal the values obtained through the biting, and check up the artist's judgment in timing the etching of the different values, Fig. 133. This experience will give the child a sense of understanding of the value scale in an original process of learning (Plate LXIV).

If the student has worked in hard and soft ground etching, he can use the same plates for the aquatint process. In this way he can grow from a line experience to a dark and light experience. As an example, let us suppose that he has made several interesting line compositions, such as portraits of his friends, drawings of objects in his home, neighborhood, and school. He can now translate these to value. Suppose he takes a portrait etching he has made of his friend and desires to make an aquatint of it. He plans to make the blouse white, the face gray, the background medium gray, and the hair dark gray. Since the picture is already etched into the plate, no drawing or tracing is necessary. The resin ground is immediately applied, and the etching and stopping out are done as has been explained. When printed, the result will be more interesting than the pure aquatint, as the etching lines will be added to it. Thus the child-artist will superimpose one experience upon the other and

Plate LXIV—Aquatint Process



Step 1: In acid four seconds. Leaves and edges of wall "stopped out" with varnish, the remainder of the plate exposed to the acid.

Step 2: In acid additional ten seconds. Background leaves and table "stopped out," also top of flower pot.

Step 3: In acid additional ten seconds. All of plate "stopped out" except flower pot. Print completed.

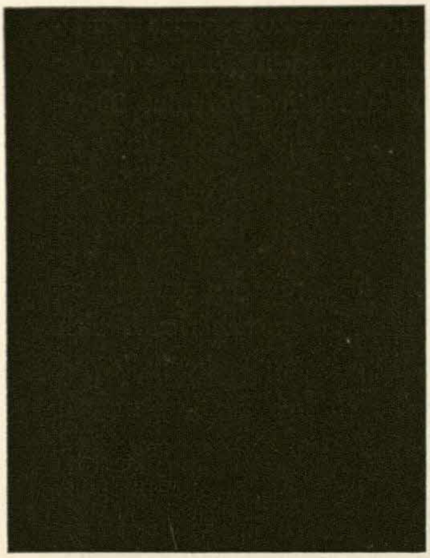
realize his own growth. He is learning not only to produce prints, but also to see light and dark values in nature and life. These simple experiences make him sensitive to the relationships of value in all objects and situations, so that he will be prepared for the study of expressing form through dark and light values.

The Mezzotint Process

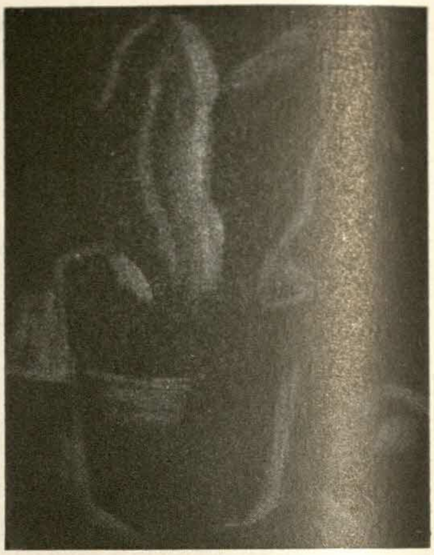
The third objective of the graphic arts is to give the concept of form. Up to this point the child-artist has had no experience with form except as he expressed it in line. For example, he indicated the form in a figure by the lines of the clothes as they moved around the body, or by the shapes of objects as they appeared in various positions, above or below the eye, or near to or far from the eye. He now needs to add the concept of changing values in an object, depending on its relation to the light it receives. For example, an apple placed in a window will appear light on the side toward the light, but the range of value gradually moves to dark on the opposite side. Often the child is permitted to realize this conception of value through studies in charcoal, but charcoal is unmanageable and distasteful to many children, some of whom acquire violent dislikes to it.

The mezzotint, however, presents an interesting and novel medium for teaching the elements of form, especially the concept of form without line, since the process employs no lines. This medium will be found very successful with boys, and will be more popular with certain types of children than with others.

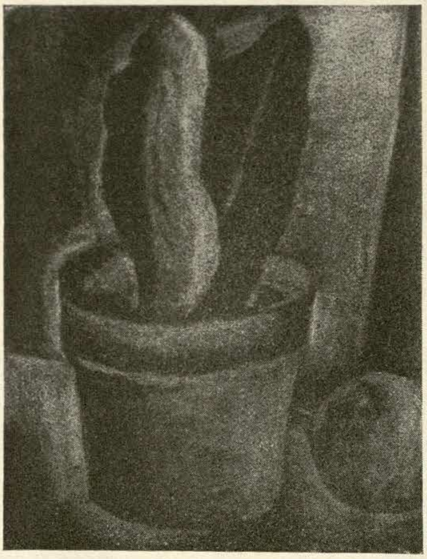
Like the dry-point, the mezzotint is not an etching process, as no acid is used. The print is produced by graining the plate. Usually the plate is grained with a rocker, a procedure which requires a great deal of skill and effort; but a simple method, appropriate for school use, has been devised, a method in which zinc or copper plates may be used. The copper plate will produce a greater number of prints, but the zinc plate will prove satisfactory for the beginner.



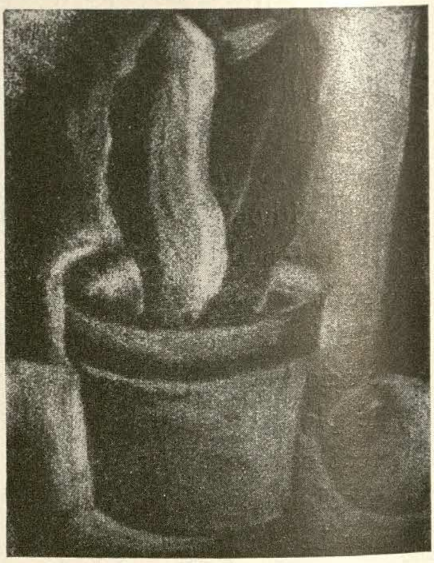
Step 1—Grained Mezzotint Plate. (If printed at this stage it would show solid black).



Step 2—Design Roughly Sketched. (By broad strokes with scraper only the light areas are cut).



Step 3—Values Brought out by Scraping more Grain away from the Light Areas.



Step 4—Lightest Areas "Burnished" and Grey Values Cut According to Desired Light Effect. (Print completed).

Plate LXV—The Mezzotint

In graining the plate, sixteen sheets of No. 0 sandpaper are cut the exact size of the plate. The blankets are removed from the etching press and the roller is adjusted to meet the plate so that it will receive sufficient pressure in passing through. The plate is laid face up on the bed of the press, a sheet of sandpaper is fitted over it, face down, and the bed is passed through the rollers. When the paper is removed the plate will show a slight grain. The excess sand should be brushed from the plate and the bed so as not to injure the surface of either. The operation is repeated until all sixteen pieces of sandpaper have been used. Each paper should be used only once. The result will be a deep, rich, silvery grain. The plate is now ready for the design.

The design should be as simple as possible for the beginner until he learns to handle the medium. For example, let us take the picture of the apple and the cactus shown in (Plate LXV—Step 4). The composition is first designed and the values indicated by the artist. The design is traced on the plate with carbon paper or drawn in directly with lead pencil. If the plate were printed at this stage, it would produce a solid black rectangle (Plate LXV—Step 1), therefore the artist realizes that it is necessary for him to work down to white from black (Plate LXV).

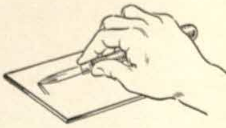


Figure 134

The tools used are a scraper, a burnisher, and an oilstone for sharpening the scraper. These tools may be purchased in any good art supply store. Scrapers vary in size and shape, but any one will do which is found convenient to the user. This tool has a four-sided cutting end which can cut soft metals (Figure 134). In cutting the plate the young artist will realize that the farther down he cuts into the grain, the lighter will be the value of the surface. If he desires a white area, he must cut all the grain away and burnish it with the burnisher (Figure 136). The burnisher is a tool with a turned up end for smoothing the surface, so as to produce a clean, white surface in the print (Figure 135).

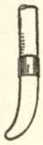


Figure 135

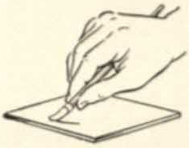


Figure 136

The scraper is used on the slant as one uses a pencil, but is held differently. Vigorous strokes are necessary to cut the resisting metal (Figure 134). No lines should be cut at first and the point of the scraper should not be used. The artist varies the tone of his surface by bearing down harder for light areas than for dark ones. For example, if he is cutting the apple shown in (Plate LXV—Step 4), he begins cutting vigorously on the light side and gradually reduces the pressure as he approaches the dark side. He can visualize the result of his print by the appearance of the bright and mat surfaces of his plate, but he can also pull a print at various stages to see how he is progressing. Making a print, in the language of the etcher, is called "pulling a print." The print is made by rag and hand wipe. If the print appears too dull, the artist may touch the palm of his hand in whiting as he uses the hand wipe. This cleans the surface where the ink is not desired and makes the white areas appear white.

The mezzotint produces a result that is totally unlike any other kind of print, and hence is a thrilling experience for the young artist. It approaches the concept of dark and light in an extremely new way, since the child experiences the feeling in his fingers of cutting away dark to get light. It adds the kinaesthetic experience to the visual and mental experience.

Teaching the Concept of Form Further Through the Lithographic Process

The graphic arts may impress the concept of form more clearly through lithography than through any of the other processes. This process presents a climax of the study of the value of line and form as experienced in all the processes previously described. It is a medium which should enrich the conception of form derived through the mezzotint process, and may result in genuine mastery of form by the advanced experience in modeling. In some ways the lithographic process is more flexible and more easily controlled than the processes already described, but it demands deeper and more extensive study on the part of the young artist. Because it requires considerable knowledge of form and an accuracy of skill in drawing, and because the printing process is rather complex, lithography may not be successfully presented to children below the senior high school grades.

Lithography, like etching, is a pure and independent art and therefore provides not only a vehicle for studying form in dark and light values, but also an entirely new, creative experience for the young artist's development.

Lithography can be thought of as two separate experiences: first, the drawing of the lithograph (indeed the more important) and, second, the printing of the lithograph from stone or metal.

The printing is a long process, and the fact that it requires elaborate equipment is an obstacle to teaching it in most schools, but the fundamental experience of form and value through the lithographic medium may be enjoyed by any one. This experience merely involves working with lithographic pencils and sticks on paper (Plate LXVI). Soft paper with a close grain serves best; tracing paper provides an excellent surface. The lithographic pencils, which are made in very soft, soft, medium, hard, very hard, and copal grades, are best for line work. The young artist may begin the study of line in lithography with his pencil, as he did with his needle in etching. Only in the litho medium the line may be graded from dark to light depending upon the pressure exerted, whereas in the etching the line was of even value. The student can now really feel his line as he proceeds, bearing down hard for a dark edge, and gradually tapering off as the edge becomes lighter or disappears. It is best for the beginner not to attempt to shade in mass, but to visualize entirely in line contours, making the sensitiveness of the line tell the necessary facts about the object. The litho pencil may be employed to express form and texture by using it in the same way that one uses lead pencils in shading; that is, with a backward and forward motion

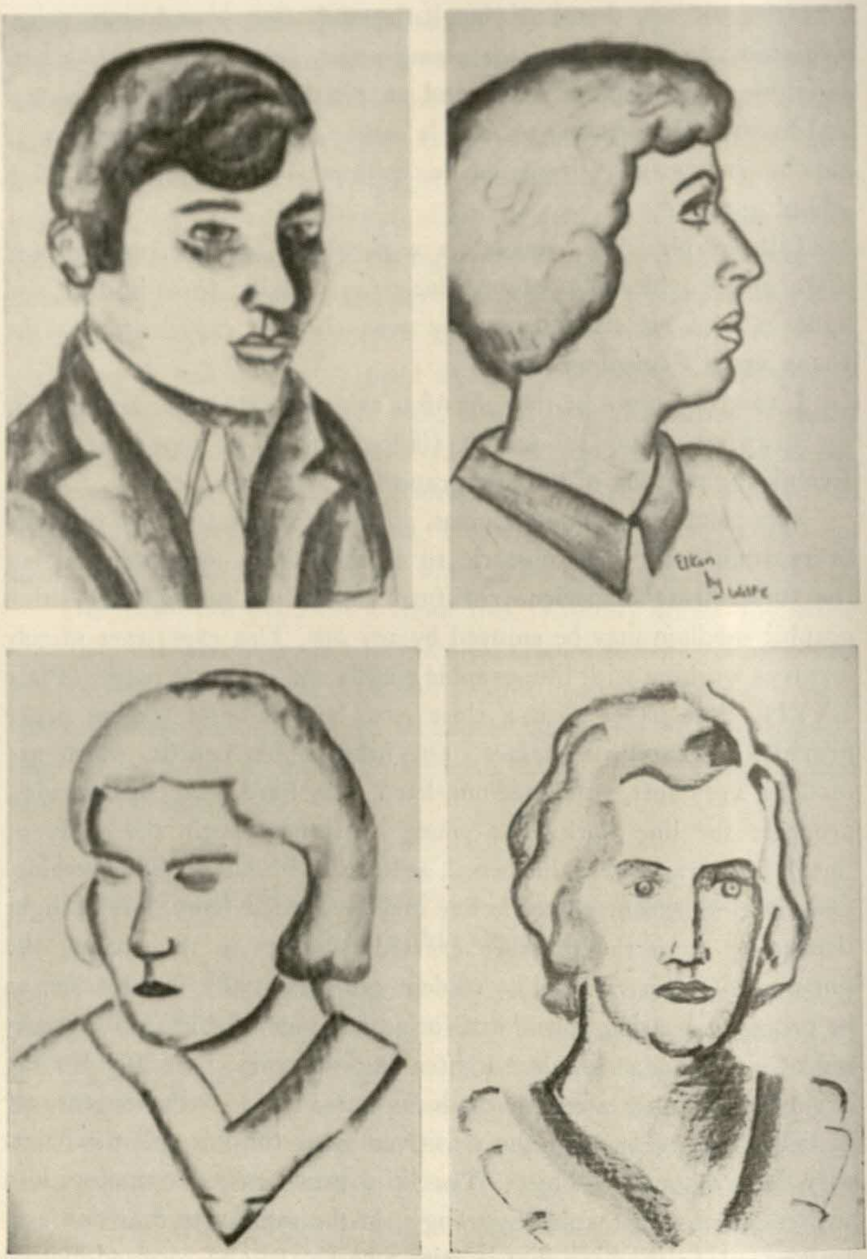


Plate LXVI—Portraits of Second Year High School Students in Lithography, Showing Elementary Concept of Form, Rendered with Litho Sticks.

until an area is filled. The artist will achieve better results if he employs soft pencils for dark values and hard pencils for light values. It is important to try not to get a black too quickly by hard pressure, but to build up the tone gradually by working over the mass again and again until a rich, black velvety surface is produced.

The author, however, advises the beginner to postpone the use of the pencil for shading until he has worked with the lithographic sticks. These are flat-sided sticks about three inches long and come in various grades: No. 0, very soft; No. 1, soft; No. 2, medium; No. 3, hard; No. 4, very hard; No. 5, copal. The great advantage of using these sticks is that they combine both line and value in a single operation and thereby present an excellent opportunity for a transition between line and form concept. The artist begins to emphasize form by suggesting it along the edges of his objects, leaving the center blank. A stick is broken in two and used on its side for broad strokes and on its corner for lines (Figures 137 and 138). By varying the pressure and tilt of the stick, the artist may achieve a wide range of values within the same stroke (Figures 139 and 140). It is wise to experiment with the sticks to discover their possibilities by first making long bands, then sweeping curves, and finally trying to suggest simple forms, as an apple, a cube, or a tree, with a few strokes (Figures 141, 142, 143).

When the artist has satisfied his curiosity and gained enough experience to give him confidence, he should begin working from a subject, such as a portrait, or figure, or still life. He should begin as he did with line, working with the contour of the object, but this time, instead of producing a line, he produces a wide stripe. In this way he learns to suggest form by varying the edges of his object, making a dark, broad band for a decisive black edge, and a light slender band for soft, indefinite edges. The artist is thus feeling and recording significant form, as he did significant line, by selecting and emphasizing those edges that seem most important to the definition of the object. He is also realizing in representing an object

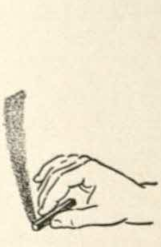


Figure 137

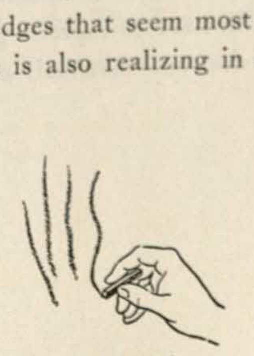


Figure 138

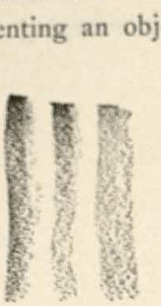


Figure 139

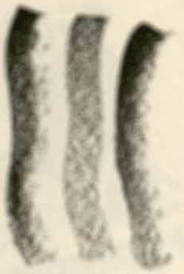


Figure 140

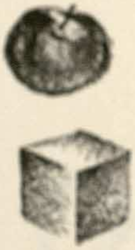


Figure 141

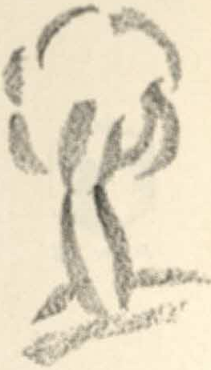


Figure 142

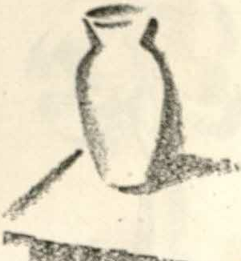


Figure 143

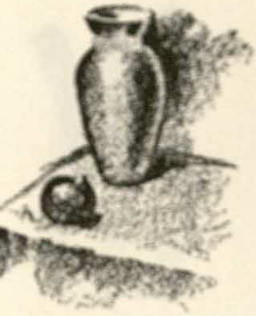


Figure 144

that the background is as important as the object itself and that it helps to identify the object as solid mass in space. For example, the form of a face or a vase may be brought out by shading the background next to it, and thereby producing a feeling of space around it (Figure 144).

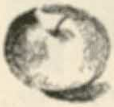


Figure 145

When he has realized form through variation of edge, the young artist can carry the modeling into the object. To express structure the stroke should conform to the planes of the object. For example, in the drawing of an apple, the strokes should travel from the center of the apple in curved planes, while a cube should be defined with flat strokes, changing in value from light to dark as the planes receive the light (Figures 145 and 146). From this simple concept of structural form, the young artist may learn to master more difficult modeling, such as figures or landscape (Figure 147). In time he will be able to see the complete organization of planes within a given form and will know how to achieve it through his medium. He may refer to the paintings of Cézanne or van Gogh, in which the method of building up a structure in planes and strokes is evident.

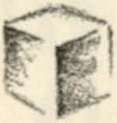


Figure 146

When the young artist has experimented with simple forms through the use of his litho sticks, he should attempt to express textures of various materials. The ease with which forms are expressed with these sticks often causes the beginner to adopt a pattern or style which may inhibit his individual development. For example, he may represent all objects as if they were made of the same material, such as wood or polished metal. To counteract this tendency, he should try to express materials of different textures, such as stone, fur, hair, steel. He may choose subject matter which will give him a wide range of expression; for example, in a landscape the geometric lines of a house, the tortuous planes of tree trunks, the softness and variation of foliage, the sweeping lines of the sky, or the undulating masses of hills or mountains. To express these forms and textures he will have to exercise great skill and ingenuity, using sweeping strokes for one material, or a pattern of dots or

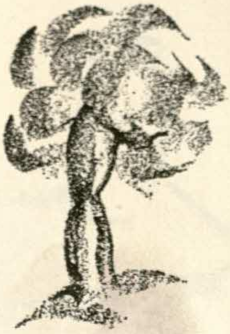


Figure 147

swirls for another. Sticks and pencils may both be used in achieving the desired effect. The possibilities are endless, and the young artist will not find a dull moment in the whole experience.

The Lithographic Process

While the lithographic process requires equipment which seems comparatively expensive for the average school, the benefits derived from it, both in educational values and sheer pleasure, greatly outweigh the expense. The teacher who succeeds in introducing lithography into the art work of his school will find his efforts repaid many fold. It is a process which involves many elements of technique and skill that engage the interest of the adolescent boy and girl. Without emphasizing superficial professional attitudes, it gives the student a feeling of having a professional experience. The skills and techniques are subordinated to creative production, and are therefore never developed for themselves. That is, every kind of technique is learned for the purpose of producing an artistic result, such as good values, richness of tone, definition of form, brilliance of print, or texture.

The lithograph is drawn on paper, stone, or metal with a crayon. Prints may be made from the stone or metal but, if the drawing is made on paper, it must be transferred to metal or stone by a special process before it can be reproduced.

The Transfer.—Drawings may be transferred from paper to stone or metal plates for reproducing in numbers. The drawing is placed between damp blotters for about thirty minutes to an hour. It is then laid, face down, on the stone or plate, which has been placed in position on the press and must not be moved for fear it will smudge. A clean sheet of paper is laid over the drawing, then a sheet of fiberboard, the top side of which is greased to permit the scraper to pass over it easily. The bed is then passed through the press. The paper should be easily removed, but if it resists pulling it should be dampened. The drawing will appear in transfer on the plate. The plate has absorbed the crayon from the drawing. The plate is then fanned dry and allowed to stand for half an hour before the process is continued.

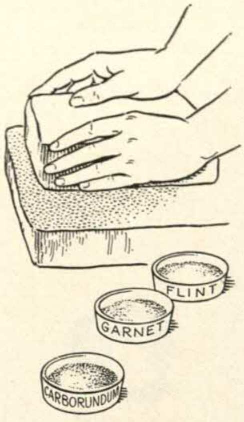


Figure 148

Metal Plates.—Zinc and aluminum plates with prepared surface may be purchased. These plates are light and easily handled and are therefore easier to use than the stone, which is bulky and heavy. However, the artist may try both plate and stone and make his decision as to preference.

Lithographic drawings may be made with litho pencils, sticks, or brush and tusche (litho ink). The pencils may be used to make fine lines or to build up tones. The sticks may be used for large work, such as posters, and should be used to give a line or a broad stroke, as already described. If they tend to soften in the fingers, they may be fastened in a holder. The brush and tusche give a wash or water color technique.

Working on Stone.—In working on stone, Kelheim stone is used. It comes in two grades; gray (hard) often called blue, and yellow (soft). The gray stone is used for the finest work; the yellow for rough or inexpensive work.

Graining.—A new stone needs no graining, but as a stone is used many times graining removes the old drawing and prepares the surface for use. Two stones are used, one larger than the other. The first may be about 8×10 inches, the second 12×16 inches. The large stone is laid on a table or in a deep tray to catch the water, and the surface is sifted with powdered garnet. Water is sprinkled over it until it is wet but not dripping. The smaller stone is slid upon it from the edge, not laid on it, and moved to and fro all over the stone in a rotating motion until it becomes hard to push (Figure 148). More water is sprinkled on the stone and the operation continued until the stone again becomes hard to work. The top stone is removed by sliding it off the under stone and both stones are washed clean of abrasive with a sponge and ample water (Figure 149). The grind-

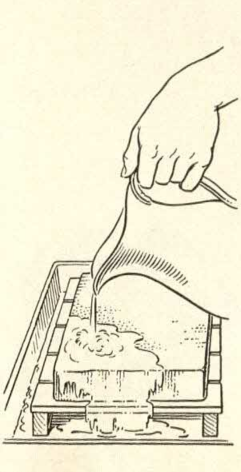


Figure 149

ing is repeated until all the scratches and drawing are entirely removed from the large stone. The final grinding, which makes the drawing surface, is done with fine flint powder. The operation is exactly as the first, only smaller motions are used, and the small stone is not permitted to overlap the large one. Two or three grindings should be sufficient to complete the graining. Stones should be washed well and permitted to dry. Both stones may be used for drawing.

Tracing the Drawing on the Stone.—The drawing may be made directly on the stone, but it is advisable for the young artist to make a preliminary drawing and trace it on unglazed tracing paper. The reverse side is penciled with a very soft drawing pencil, 4B or 5B. The tracing is laid face down (soft penciled lines against the stone) and held in place with Scotch tape or any other adhesive. The artist will do well to see that the drawing is centered and that a margin of at least one inch is allowed all around the drawing. As the drawing comes out in reverse when printed, the artist should take this fact into account and reverse his drawing on the stone if necessary. For example, a familiar scene or lettering will appear backwards if it is transferred to the stone in the same position as it was drawn. The drawing in place, it is now traced over with a hard pencil, transferring the soft pencil lines on the back to the stone. The stone is dusted off with a soft clean brush or rag.

Drawing.—Drawing with the lithographic pencils and sticks is now begun. The light tones and lines are laid in with the hard pencils and sticks, building up the tones darker as needed with the softer ones. A hard pencil is never to be used over a soft one, nor should the student try to get a black too quickly by forcing the crayon. The tones are built up gradually and lines, planes, and edges emphasized as the composition demands, with the proper pencil or stick. The surface of the stone is actually a myriad of tiny hollows which are filled with the wax crayon. If they are filled too solidly, they lose their rich vibrant quality and fine texture and produce a coarse tone. White lines or areas may be retrieved or a special effect achieved by scratching through the crayon surface with a sharp tool and a razor blade, but purists would frown on this method. Tusche may be used for producing wash effects. It is a stick which is dissolved in water to make a gray or black wash by grinding in a circular motion in a saucer and laid over the area desired with a clean brush. Tusche and crayon may be used in the same drawing, but they should be made to harmonize in technique and blended in quality. The worker must keep his hands off the stone, as grease from them will mar the print. He therefore rests his hand on a felt pad or clean rag while working (Figure 150). The stone should be covered when not in use, as dirt particles in the air may injure it.

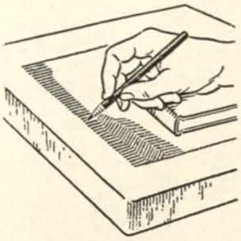


Figure 150

The Etch.—After the drawing is complete, the stone is etched. A solution of nitric acid, gum arabic, and water is flowed on the stone with a brush or a piece of absorbent cotton (Figure 151). The gum arabic desensitizes the surface not drawn on and penetrates every pore of the stone, making a resisting wall around each dot, thus holding the dots to their original size. The nitric acid eats away any invisible particles of grease and removes any grease which may have spread around the dots thus keeping them to their original size. It does not affect the drawing or etch the surface. In preparing the etch for a stone, gum arabic crystals are dissolved in water to a thickness of heavy cream. Prepare about a quart, but use about one pint for the etch, leaving the remainder for later use. Put it in a glass container and add from one-fourth to one ounce of nitric acid and stir with a glass rod. The amount of acid varies with the darkness of the print and the prevailing temperature. A cool day and a light print require a weak acid while a warm day and a dark print require a strong acid.[3] Zinc and aluminum plates require a different etching solution. These plates are grained by a special process and cannot be done by the amateur. They are, however, fairly inexpensive and

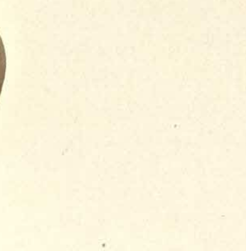


Figure 151

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[3] G. C. Miller in the *Encyclopaedia Britannica,* (New York: The Encyclopaedia Britannica, Inc., 1929; 14th edition) gives the following formula for the etch for stone: one-half glass gum arabic to one teaspoonful of nitric acid.

more practical for school use. For zinc a solution of gum arabic, chromic acid, and phosphoric acid is used; and for aluminum, gum arabic and phosphoric acid.[4] Too strong an acid may injure the light values, while too weak an etch may not thoroughly dissolve the grease about the dots. The acid is allowed to dry for at least half an hour, but it produces the best results if it is left overnight so that the gum may penetrate each pore.

Gumming.—The stone is washed with clean water and a sponge, then a new layer of gum arabic is laid over it at once with a small sponge. The gum solution (not the etch) left from the first stage is used. The surface is gently rubbed with a soft pad of clean cloth until all traces of gum and water are removed from the drawing, then the surface is dried by fanning (Figure 152). The purpose of the gumming is to get the stone ready for removing the crayon which is no longer necessary, since the grease and not the pigment acts in the process. The gum arabic protects the undrawn portions of the stone from the dissolving crayon. Turpentine is sprinkled on the stone and rubbed with a folded rag. Since the gum did not adhere to the crayon, the drawing is easily removed. The drawing now disappears except for a grayish image. Asphaltum is applied before the turpentine has fully evaporated to strengthen the greasy image of the drawing. One teaspoonful of asphaltum diluted in turpentine to the consistency of heavy cream is applied to a soft wad of cloth and stroked over the surface until it has a brownish tinge.

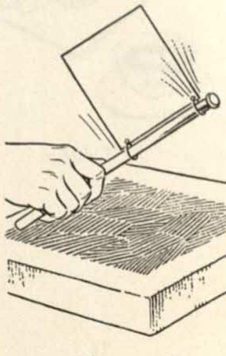

Figure 152

Inking.—A special roller for lithography made of horsehide or a composition material is used. The ink is applied to the roller with a spatula in bands the length of the roller (two or three) and rolled back and forth over the inking slab—a marble slab or ground glass plate or an old stone is ideal for the purpose. At first too little ink should be used rather than too much. A special lithographic ink is obtainable. The roller should be cleaned with turpentine and allowed to hang by its handle or rest on a prop made for the handle when not in use. If left on a flat surface it will lose its shape.

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[4] G. C. Miller, *op. cit,* gives the following formulas: For zinc plates one-half glass of gum arabic to one teaspoonful of chromic acid, to from twelve to fifteen drops of phosphoric acid. For aluminum plates one-half glass of gum arabic to from fifteen to twenty drops of phosphoric acid.

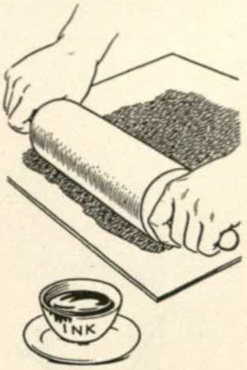

Figure 153

The stone is now washed with clean water and a sponge to dissolve the film of gum arabic and remove the dissolved crayon. The stone is immediately inked or rolled up (Figure 153). Care should be taken to see that no part of the stone is left dry. As a precaution, a wet sponge is passed over the stone several times before it is inked. Because water and grease do not mix, the water will only adhere to the undrawn surfaces, while the ink (a grease medium) will only adhere to the drawn surfaces. If the water oozes under the roller or drips over the edges of the stone, it is too wet. The excess may be sponged up. The roller should be re-inked and applied to the stone. When the design appears in its original values, the stone is allowed to dry. After the stone is dry, the surface is powdered with resin, using a piece of absorbent cotton as a dabber, then it is rubbed lightly with the cotton so that the resin will cover the entire surface. The excess resin is removed with a damp sponge. The resin makes the ink acid-resisting and protects the greasy image.

Cleaning the Stone.—The edges are now cleaned with a "snake slip" (a stone stick about three inches long) after the surface has been thoroughly wet with a sponge. The snake slip, used in an erasing motion, removes all the marks from the border and gives a clean edge to the picture. For a sharp edge the snake slip may be run along the edge of a metal ruler held in place on the borders of the drawing. The stone is dried by fanning.

Re-etching.—The stone is again etched with the original solution, allowed to remain one or two minutes, then sponged off at once with clean water. The second etch is done to keep the values consistent and to insure against greater darkening. The stone is gummed (with gum arabic) once more, allowed to dry, and then washed with turpentine to remove the ink and resin.

Printing.—The stone is now laid on the press bed while the turpentine is drying. The gum and dissolved ink are sponged off with water and the stone is inked once more. Several sheets of paper, depending on the number of prints to be pulled are dampened with a sponge and placed between blotters for use.[5]

The Press.—It is well to examine the press for a moment. The one used is a special press, unlike any other type used in the processes of the graphic arts. The main difference is that it uses a sliding pressure by means of a blunt blade, called the scraper, passing over the stone. The principal features of the lithographic press are: a large bed which moves back and forth on metal tracks; a crank at the side for moving the bed; a scraper box, a metal arch over the bed which may be raised or lowered by a hand screw to fit the height of the stone; a scraper, a blunt-edged piece made of boxwood or applewood covered with a leather strip, fitted into the scraper box where it is held by a screw; and a pressure lever, a bar at the side of the press near the crank for raising and lowering the press bed.

Setting the Stone and Printing.—The stone is laid on the press bed face upward and in line with the scraper. The stone should be centered with the scraper. A piece of dampened paper is laid on the stone in correct position with a larger piece of dry paper over it. Fiber paper (the type used in print shops) is laid over these papers and its top surface greased with vaseline to facilitate the sliding motion. The press bed is moved forward a little by turning the crank at the side until the forward edge of the stone is directly under the scraper box. The press bed is raised to meet the scraper by the pressure lever at the side, and the pressure adjusted by moving the scraper box up or down. The scraper (which has also been greased) should set inside the edge of the stone about one-half to three-quarters of an inch. Care must be taken in adjusting

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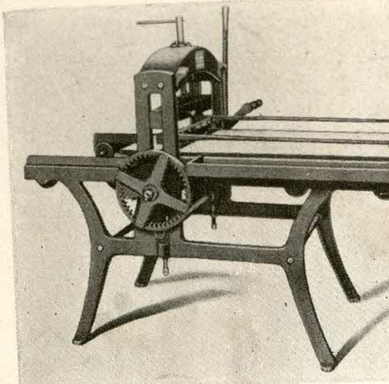
[5] The following papers will be found satisfactory and inexpensive: Rives white or buff, Navarre domestic, or Basingwerke. A good grade of white drawing paper may be used for trial prints.

Plate LXVII

Rutherford Geared Lithographic Hand Press



the proper pressure, as too much pressure may crack the stone, while too little will give a light print. A few trials will tell exactly how much pressure is needed as the artist gets the feel of it. The pressure lever is now locked in place and the bed is moved forward by turning the crank until the stone has passed through and the scraper rests on its far edge. The crank is released and the pressure lever pushed back into a neutral position which lowers the bed and causes the stone to drop free of the scraper. The fiber and protecting papers are removed and the print is lifted gently or peeled from the stone. The print may be stretched in the same way as the etching, or it may be pressed between blotters until it is dry. The stone must be inked separately for each consecutive print and the same operation for printing is to be followed.

When the printing is finished, or if any considerable time is allowed between printing periods, the stone is inked or rolled up and gum arabic applied over it. The gum remains until the next printing. When starting to print again, the gum is washed off with a sponge and water. It then receives a re-gumming with gum arabic and is allowed to dry. The old ink is washed off with turpentine and dried. The surface is washed with a sponge and clean water and the stone is inked. The printing now proceeds as before.

Printing from Metal Plates.—Zinc and aluminum plates require the same process for printing as just described for the stone, but as stated, different etching solutions are used (see p. 179). When ready to print the plate is laid on an old lithographic stone to give it the proper height and the printing proceeds as has been described. Metal plates may be kept for further use just as the stones are, but they must be inked and gummed between printing periods. Both stones and plates yield numerous prints. Aluminum and zinc plates may be drawn on only once for they cannot be regrained by the student as in the case of stone. The graining of metal plates requires an expert mechanical process and it is simpler and cheaper to buy new plates than to try to have the old ones regrained.

Points to Remember in the Process

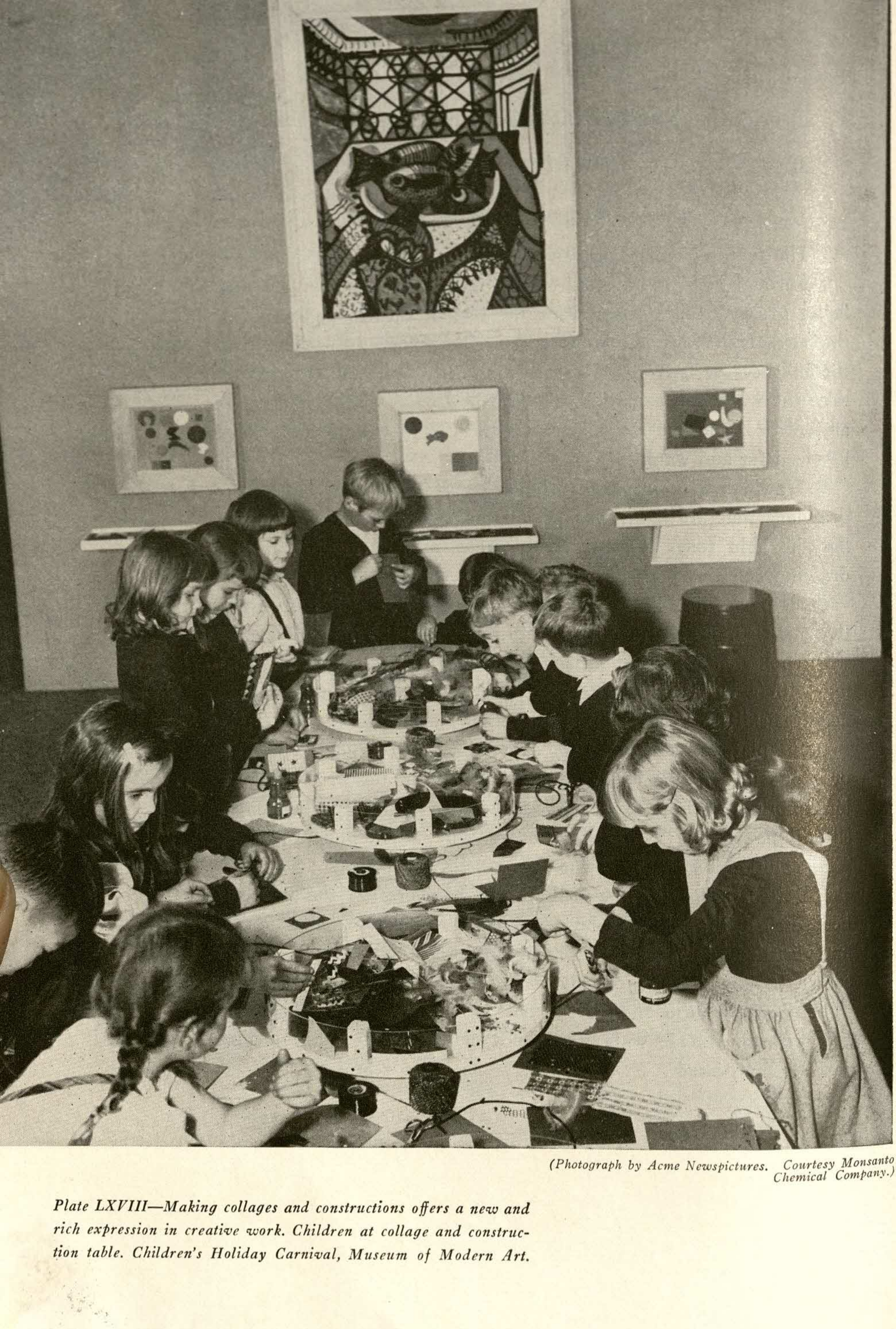
The plate or stone must always be dampened before inking.

Through etching, the stone is made grease resistant; the drawing, being greasy, resists water while the rest of the stone, because of the acid, resists ink but holds water. The greasy drawing receives the ink because it is also a greasy substance, while the clear spaces take the water but resist ink. The chemical effect of the gum arabic and nitric acid (the etch) increases the lack of affinity that exists between fat and water.

Drawings that are dark in tone require a stronger etch than drawings that are light. The printer must guard against over-etching the light tones or their subtle values may be destroyed. If a drawing contains both heavy black tones and subtle gray ones, its various parts should be etched with a strong and weak acid respectively. It is more expedient for the beginner to make simple drawings with spontaneous lines of rather even value, than to attempt a drawing with a variety of shades and delicate changes of tone. As he acquires skill, he can attempt more complex drawings.

The plate must be inked for each print that is pulled. The plate or stone must never be left unattended during the process. If an interruption or delay in the process becomes necessary, the surface should be washed with a solution of gum arabic for protection. This solution is washed off when the process is resumed.

If a correction is to be made in the drawing after the plate has been etched, the acid must be removed with a mixture of acetic acid and distilled water (a very thin solution, which should taste slightly sour). It should be applied only to the portion that is to be corrected. When bubbles form, the surface must be washed with a sponge and the correction made with litho pencil or crayon; then the etching process is repeated.



(Photograph by Acme Newspictures. Courtesy Monsanto Chemical Company.)

Plate LXVIII—Making collages and constructions offers a new and rich expression in creative work. Children at collage and construction table. Children's Holiday Carnival, Museum of Modern Art.

Chapter Seven

The Child as Creative Inventor

Collage and Construction

When Picasso and Braque invented collage by pasting newspaper, theater tickets, and other materials onto their paintings, they probably never dreamed that they were opening a world of creative adventure to children. Likewise the masters of constructions, Gabo and Pevsner, and other artists, were unaware that they were providing ideas and techniques which would offer new opportunities in three-dimensional media for children and young people of all ages. Most of us are acquainted with the wonderful mobiles of the American artist Alexander Calder. Anyone who visits the Museum of Modern Art in New York City can hardly miss the enchantment of the mobile called "Lobster Trap and Fish Tail" which hangs in the stairwell (Plate LXIX). If Calder does not have children in mind when he makes his mobiles, he certainly has the child's spirit of wonder and enjoyment. In this respect he seems ageless, for he retains the curiosity of youth and its delight in originality and imagination. Though a supercraftsman himself, Calder is never deceived by sheer technical facility or clever tricks.

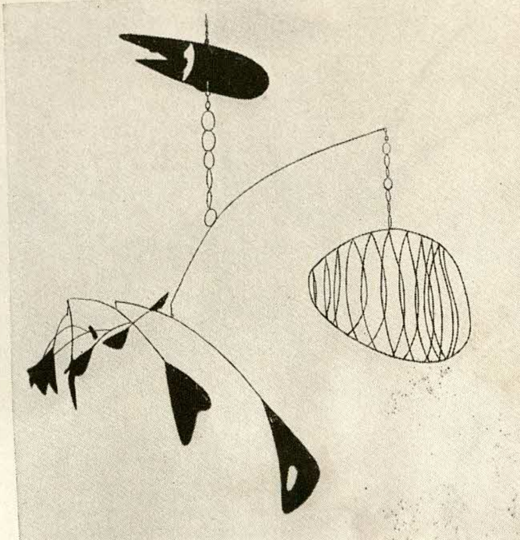


Plate LXIX

"Lobster Trap and Fish Tail," 1939
A Mobile by Alexander Calder
Museum of Modern Art
(Photograph by Herbert Matter)

It is interesting that in a recent film on his work, Calder has a young boy as the only actor besides himself.* The film, which has a running commentary spoken by Burgess Meredith, begins with shots of art in nature, leaves and grasses blowing in the wind, and waves lapping on the shore, and is alternated with shots of Calder's mobiles in which the colors and rhythms of nature are revealed and accented. In the fantasy the boy first observes the everyday phenomomena of nature and then wanders into Calder's studio, where Calder is working on a mobile. The studio is a wonderland of creations in itself. It is a large stone room with a high ceiling from which numerous mobiles hang in a variety of colors, shapes, and materials, all moving together in a symphony which is dazzling and hypnotizing in its delight. On the floor is a maze of materials (coils of wire, sheet metal, and iron rods), tools, and machines. In the midst of it all, Calder works in a bright red shirt. The boy comes into the studio filled with wonder and awe. The commentator says that the things the boy saw in nature and the mobiles in Calder's studio got mixed in the boy's mind, which was exactly what they were supposed to do.

The Calder film has been used as an introduction to the art of collage and construction to emphasize the dramatic and emotional side of this exciting art. Collage and construction is in a sense the enjoyment of pure design. There is always the tendency to reduce art to rules, and this is particularly true of design. The design elements are frequently studied separately and methodically, so they become a series of rote exercises rather than spontaneous, emotional, integrated experiences. One striking factor in the Calder film is that the word design or any dogmatic phrase is never mentioned. What the observer receives is a convincing feeling that design is an active part

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* *Works of Calder*, Museum of Modern Art Film Library.

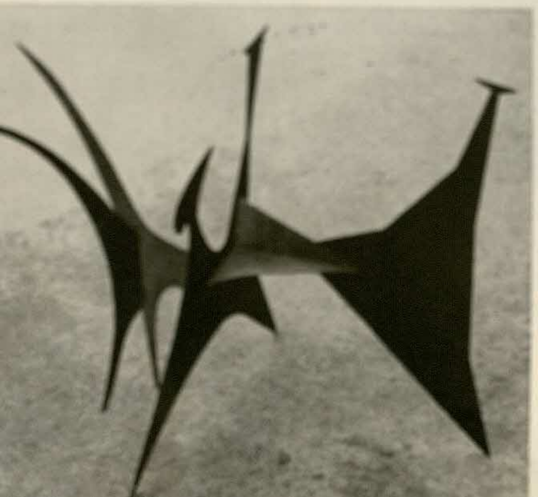

Plate LXX

"Black Beast," 1940

A Stabile Made of Sheet Steel by Alexander Calder

Museum of Modern Art

(Photograph by Herbert Matter)

of life every day, everywhere, and that the more sensitive you are to it, the richer living becomes.

Design Media Suited to the Child's Nature

The great advantage of collage and construction is that the child can create directly in a design medium that is suited to his nature. For the benefit of those who are not acquainted with this art form, the following simple explanation is offered.

A collage is a design made up of a variety of materials selected for their interesting pattern, texture, and color and organized in an original composition. It is largely flat, with the materials pasted or otherwise fastened against a background. Certain parts may be raised or recessed in relation to the background plane (Figures 154 and 155). A construction is a three-dimensional free-standing design made of one material or of various materials selected for their interest and combined into an original composition. A construction that has no motion is called a stabile (Plate LXX); those that have swinging, turning, or balancing parts are called mobiles (Plate LXIX). The motion in a mobile may be produced by air currents moving the neatly balanced parts, by some means of effecting hand power, such as a crank, or by springs or electric motors.

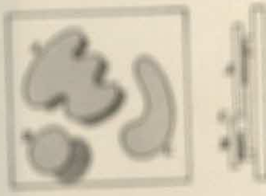

Figure 154

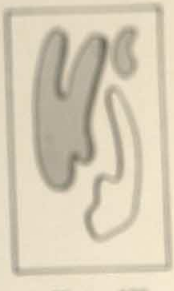

Figure 155

Collages and constructions offer an infinite variety of possibilities and can be adequately gauged to the use of every age level from preschool to the senior high school level, and beyond, of course, to the art school and the professional artist. They appeal to the child's desire for exploration and to his imagination. Because he works with design directly, there is less fear that he may be influenced by clichés or stereotyped ideas than in drawing and painting.

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(*Photograph by Sunami*)

Plate LXXI—Children looking through colored gelatine are delighted with the way it changes the world. They are making transparent collage by pasting the gelatines together. Children's Holiday Carnival, Museum of Modern Art.

Collage—Exploration of Materials

With the very young child (three to four years) collage can be a spontaneous experience. A variety of materials, both natural and manufactured, is used, such as pebbles, sea shells, fur, paper and cloth (figured and textured), gelatins, string, yarn, and colored construction papers.

Each classroom or art room can be equipped with a collage box or a collage table (Plate LXXII) filled with materials from which the child can make his selection. Such a box or table can be easily filled up as a cooperative project between teachers and children. The children can bring things from home or go on a treasure hunt in the woods, at the seashore, or in the school. The scraps and throwaways from the woodworking shop or the domestic arts room will produce a good supply. Add to this canceled stamps, holiday wrapping papers, tinsel, and swatches from the sewing basket at home, and the collage source is well started. Given the stimulus, children will find things that a teacher might never think of herself.

For the very young child the collage experience begins as one of feeling and seeing new materials or perhaps finding excitement in common materials he takes for granted. The first stage can be just exploring the collage table and selecting bits of those things which have an appeal for the individual, perhaps a smooth piece of fur to stroke against one's cheek or a piece of colored gelatin to look through and see how color can change the appearance of the world (Plate LXXI). Much of the pleasure and learning derived from making collages is native to the young child because he begins his sensitivity to his environment through the touch and feel of things. The infant enjoys the smooth and warm feeling of his mother's body, the refreshing fluid quality of the water in his bath, or the touch of soft clothes. Through experiments in texture the child learns about such qualities as hardness, softness, coldness, sharpness, and furriness.

After the initial exploring of feeling and touching, the child can learn to select and compare. He can compare those materials which are rough with those which are smooth, or those which are shiny with those which are dull. He can put them together in a design, pasting or stapling them. At first just a bottle of mucilage with a dispenser top and a pair of scissors will be enough, especially for the child of

Plate LXXII

Collage Table with an Assortment of Materials
(Photograph by Sam Weiner)

three or four years (Plate LXXIII). These will also suffice for the six- or seven-year-old if it is his first attempt. He can paste the bits of materials against a background or he can paste them against each other in a fascinating irregular pattern (Plate LXXV). The presence of the scissors will suggest that the pieces may be cut and the child will therefore change the shape and size. In this way he will become aware of the importance of volume and contour in design. Of course, if the child doesn't realize these possibilities by himself, the teacher can make him aware of them (Plate LXXIV). From the initial stages of just finding out the nature of materials to comparing them, the child may proceed to greater refinement and discrimination. He will come to recognize that texture and pattern and color make up a major part of his environment and that they are extremely important. What may have been a casual, accidental, or subconscious experience now becomes a progressive conscious part of learning; and because the individual shares these experiences with others, social bonds are developed and strengthened.

Motivation and Guidance

It will depend on how early the collage experience begins, of course, to determine the proper motivation and guidance. If it starts very early, a great deal of the experience will be guided by subconscious, spontaneous reaction with only occasional, but skillful, guidance by the teacher. At the later years of the elementary school, and especially at the junior high school period, the study will become a consciously planned exploration. For example, while the teacher may casually have introduced to the child the term "texture," or a simple substitute word, at the early levels, she can now definitely state that texture is a property of design to explore. One exercise which produces a great deal of excitement and pleasure at these later stages is the rubbings made of the textured materials. This project may come when

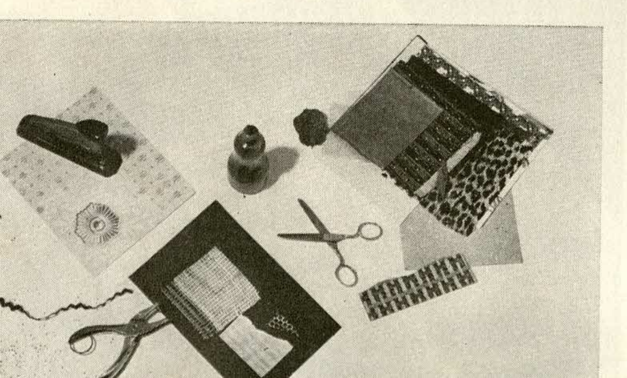


Plate LXXIII

Simple Tools for Making a Collage (Photograph by Sam Weiner)

Plate LXXIV—Teacher Helping Three-Year-Old Child Discover Qualities of Various Materials. Museum of Modern Art Classes. (Photograph by Hilda Reis.)

the teacher wishes to make children aware that texture has a pattern quality, or that many patterns possess no actual texture sensation but call up the sensation of texture visually, such as a photograph of fur. Both pleasant and unpleasant responses may be produced by merely a visual stimulus. The photograph of a sleek furry coat, for example, may produce the feeling of wanting to stroke the picture even though one knows that he will feel only the cold hardness of the paper, while

Plate LXXV

Collages by Children, 3-4 Years of Age
Museum of Modern Art Classes
(Photograph by Sam Weiner)

on the other hand a photograph of the "Fur-lined Tea Cup" will produce the opposite reaction of recoil or disgust.

Such experiences heighten the child's awareness of the visual impact of texture. Rubbings can be made with a crayon over a sheet of paper. The children may be asked to explore their immediate environment—the classroom, school neighborhood, and home—to discover as many textures as they can. They will bring in rubbings of such materials as gratings, brick surface, stone, wood grain, cane chair seats, automobile tires, and of many textures that they never knew existed. When they come to the making of collages they can be challenged by the advice that each work should be as different as possible, or as original as possible, and that originality can come about by the juxtaposition or volume of materials used together.

With the senior high school level the process is largely a conscious study. Not only can older students observe the elements of design objectively, but they can go into the psychological implications involved. Of course, the fact that an experience becomes a conscious affair does not necessarily mean that it should become formal and impersonal. It can and should be a stimulating and personal adventure for each individual. The great value of collages and constructions is that they do involve sensory responses and ingenuity at every stage and age of development. At the older levels greater refinement and selectivity should be sought (Plate LXXVI). The student can be limited, for example, to the subtle range of values in a single material. The study of collage at this stage can also introduce a three-dimensional quality by building up from the background in layers of material or by supporting certain materials on a block or peg, or in some other way, from the face of the collage, so that they seem to stand free. Coils or irregular shapes of wire can project from the background and have other shapes hanging from them. Then the background itself can be pierced with geometric or free-form apertures to create another dimension.

Constructions—A Natural Form Medium for the Child

Constructions are closely allied to collages but they offer wider experience in three dimensions. Educators are coming to recognize more and more the importance of form media which children and young people can manipulate directly and easily. Special studies on this problem made at the People's Art Center of the Museum of Modern Art are yielding increasing evidence that children may, by nature, be more three-dimensional than two-dimensional in expression. At least a growing interest in collages and constructions has been observed, and it has been definitely established that many children respond more readily to form media than to flat media. It must be remembered that painting and crayon have dominated the teaching of art for so long that many children respond to them or seek them from habit. Added to this is the fact that teachers as a rule have been trained in the flat media and therefore tend to encourage or introduce those media. It cannot be repeated often enough that in the long run the richness of the art experience offered to the child is measured by the preparation of the teacher. Too few teacher-education institutions include collages and constructions in their curricula, and among these few there is not sufficient emphasis on the relationship of these experiences to the child's creative and mental growth.

Constructions are ideally suited to the creative insight and interests of children because they allow for spontaneous creating in materials which are pliable and easily related, and also because they expose the individual to a wide range of materials and techniques. The other three-dimensional media covered in this book, such as sculpture and ceramics, have their distinct value, but they involve a series of activities in a single medium such as clay, wood, or stone. Constructions cut across these media, using all media freely and in association with each other. In a sense it inspires more exploration and invention with the traditional media. The opportunity to use new materials such

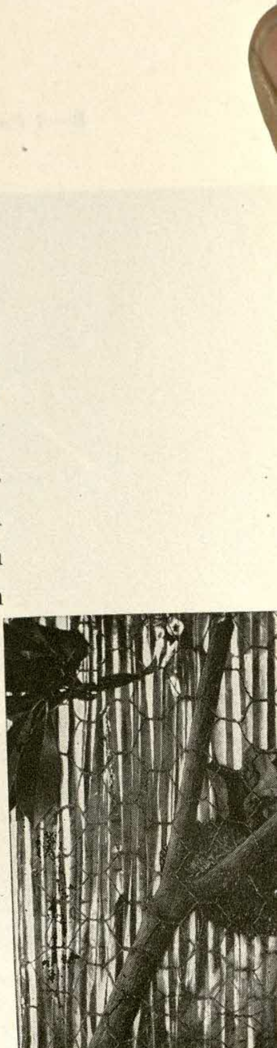
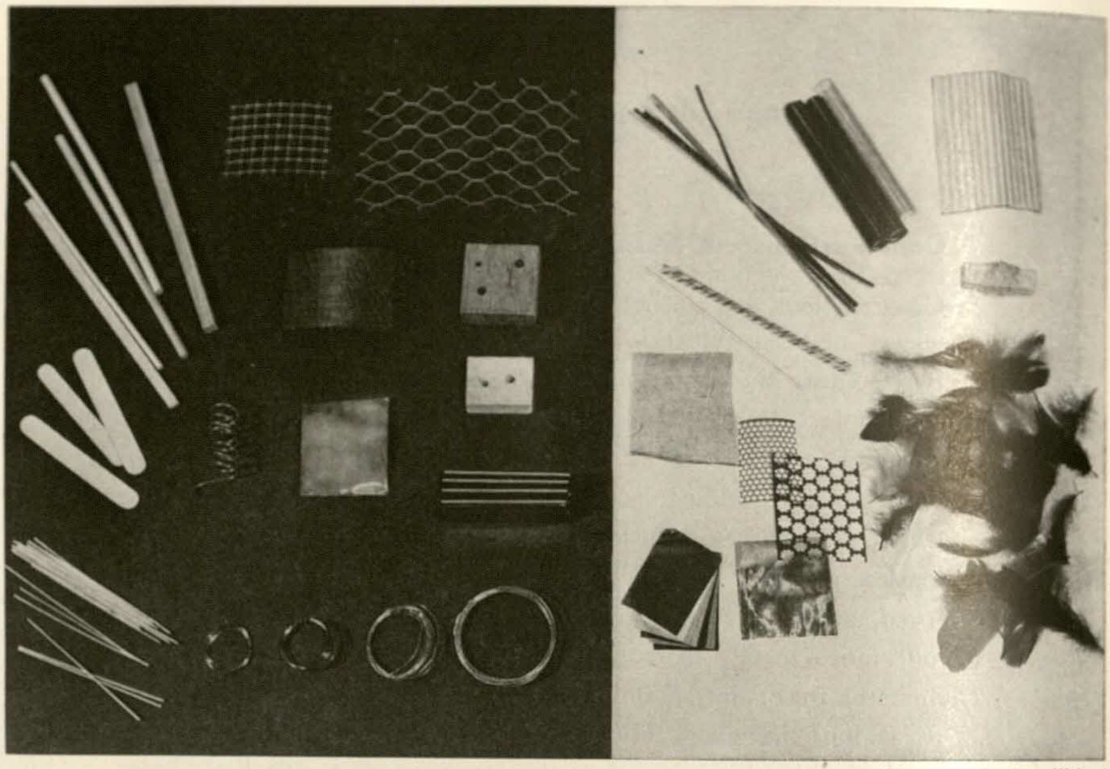


Plate LXXVI

Collage by High School Student Made of Metal Foil Background and Natural Twig and Leaves, with a Covering of Chicken Wire Museum of Modern Art Classes (Photograph by Sunami)

Plate LXXVII



(Photograph by Sam Weiner)

A—Some Basic Materials for Beginning Constructions. Left: Dowel Sticks; Different Gauges of Wire; Screening; Corrugated Board; Wooden Bases with Holes for Dowels; Metal Foils; and Sheet Copper. Right: Pipe Cleaners; Gelatines; Feathers; String of Different Sizes; and Grass Cloth.

B—A Variety of Construction Materials for Advanced Projects in Both Collage and Construction. Museum of Modern Art Classes.

(Photograph by Sunami)

as plastics and metals offers greater inspiration and the introduction of ready-made objects like spools, buttons, and balls gives the child with less technical skill the power to exhibit his imagination and inventive ability without too great a dependence on manual dexterity. In the making of mobiles the stimulation is heightened by the addition of motion. The ability to make a thing move as well as give it color, texture, and interesting form is extremely appealing to the child.

Constructions use all of the materials that are employed in making collages, but in addition include those which are necessary for building in three dimensions: tongue depressors; swab sticks; copper, iron, and brass wire of various gauges; colored yarn and string; sheet metal, especially the light gauges like foils and taggers; all kinds of wooden blocks and sticks of various lengths and widths; balls, wood, and rubber; Christmas tree decorations; springs; sponge rubber; rubber bands; tinsel; colored gelatins; leather; and findings. Also, any waste items like old buttons, spools, and small boxes such as match boxes or vitamin-pill boxes, offer opportunities to the inventive mind (Plate LXXVII).

We are still uncertain as to how young a child can make constructions. Children constantly surprise their teachers in demonstrating greater perception and skill than is expected. There is an interesting story that exemplifies the tendency of teachers to hold back their children's growth rather than to promote it—not intentionally of course, but through ignorance of the child's potentialities. Each year the Museum of Modern Art holds a Children's Holiday Carnival of Modern Art. This combines a gallery of art objects chosen for the interest of children with a studio workshop where the children can paint or make collages and constructions. A child usually applies individually to visit the Carnival, but groups, especially school groups, are also invited. One school sent its class of seven-year-olds escorted by their art teacher. (The Carnival is supervised by trained art teachers.) The group enjoyed the exhibition gallery, but when they came to the studio workshop they only painted or made collages; none tried making a construction. The art teacher in charge of the Carnival proposed that a few might make constructions, but the children's art teacher interrupted, saying, "Oh, no, they can't do that. They're too young. Children aren't able to do three-dimensional work until they are eight years old. You see, until then they only work in two dimensions."

What this teacher did not know was that children of four years of age made constructions in the Carnival's studio workshop every day, and that in the Museum of Modern Art classes children of three make very excellent constructions. Of course, the materials and techniques are greatly simplified to meet the abilities and requirements of their age level.

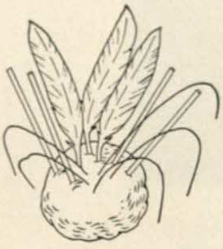


Figure 156

Methods of Working

Following are a number of ways to build constructions from the most simple to very complex ones, with indications as to which may be best suited to various age levels. It is recognized that there is danger in offering these suggestions because many teachers will accept an example as the only way and never proceed beyond it. An example, of course, only suggests a range of possibilities or opens up a wide field. Often the example itself is not the experience to use or to start with. The decision will have to be left to the ingenuity of the teacher. While there is danger in being too specific, there is also a danger in being too general or vague. The growing habit of accepting indecision as creativeness, or chaos as variety of experience, is one which will bear strange fruit and cause much harm in the future if it has not already done so. With these cautions in mind the following procedures can be used judiciously.

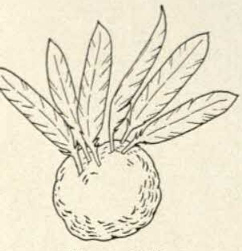


Figure 157

The most simple method of making a construction is to stick materials such as feathers, pipe cleaners, grasses, straws, and sticks into a lump of moist clay, which is used as a base (Figure 156). Some six-year-olds, for example, made fascinating stabiles by inserting large feathers of different colors into a clay base (Figure 157). One child stuck thin wires into his base and made balls of clay and dangled them from the wires (Figure 158), producing a graceful and delicately balanced design. Others put colored soda straws and other materials into their constructions (Figure 159). A class of three- to four-year-olds made sensitive compositions of grasses and wheat which the teacher had added to her materials supply. The practice of using clay with other materials (for example, figures modeled in clay with head-dresses of feathers or wool, or the making of imaginative animals where buttons are used for eyes and fur is added as a tail or mane) is indicative of the freedom in mixing media which constructions inspire. The clay, of course, dries out and the object eventually disintegrates, but this should not be despaired. There is perhaps too much emphasis on the preservation of the finished product of the young child and too little on the value of the experience itself. This may not be the place to go as thoroughly into this problem as is necessary, but in passing, it should be noted that the doing is much more important than the result. There is nothing tangible left over when a child plays or dances; the doing is the thing. In art the emphasis on producing something to show, to take home, has its disadvantages to the child and to the teaching process, but this new point too may be overstressed.

Constructions may also be made by inserting dowels into holes bored in a block of wood or by nailing sticks to the block (Figure 160). To these, other pieces may be nailed or fastened with wires or string (Figure 161), making balancing arms to which objects such as balls, spools, or forms invented by the child may be attached. The use of tools such as hammers, saws, drills, and wire cutters appeals to children of the later elementary grades, and especially to junior high school students. Boys particularly will enjoy the use of tools and the craftsmanship required, but this fact should in no way discourage the girls, who will in many instances prove superior to the boys both in response and dexterity. Blocks with holes already drilled should be provided for the very young child so that he can fit the dowels into

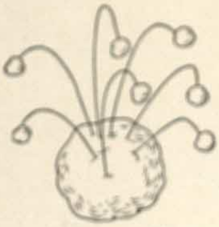


Figure 158

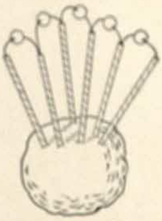


Figure 159

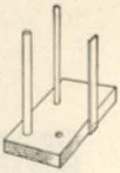


Figure 160

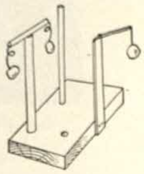


Figure 161

them. If the holes are drilled at an angle to the base, as well as vertically, it will provide for a more dynamic design. One-eighth, three-sixteenths, and one-quarter-inch holes should be bored and dowels of the same diameters provided.

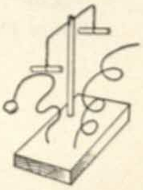


Figure 162

Mobiles constructed on a base such as is described above can derive their motion from wires or strings tied to the vertical sticks or cross-arms so that the objects fastened to them will sway, turn, or balance. Wires of heavy gauge can be fixed in the base and made in a spiral or an irregular shape to produce a spring motion (Figure 162). Smaller holes should be bored to fit the wires.

Mobiles can also be made on a string or wire suspended from a bar or crosswire (Figure 163 and Plate LXXVIII). A wire or balance cord can be stretched across the room and strings hung at intervals so that an entire class can work at the same time. This will provide a group activity where the combined enthusiasm and ideas can be shared. There may be a tendency for some children to copy others, but this is a problem which the teacher should try to overcome by direct guidance rather than subterfuge. Imitation of any kind is an indication of a habit or weakness which has been long in the making, and avoiding situations which reveal these conditions is not a solution.

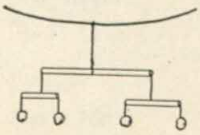
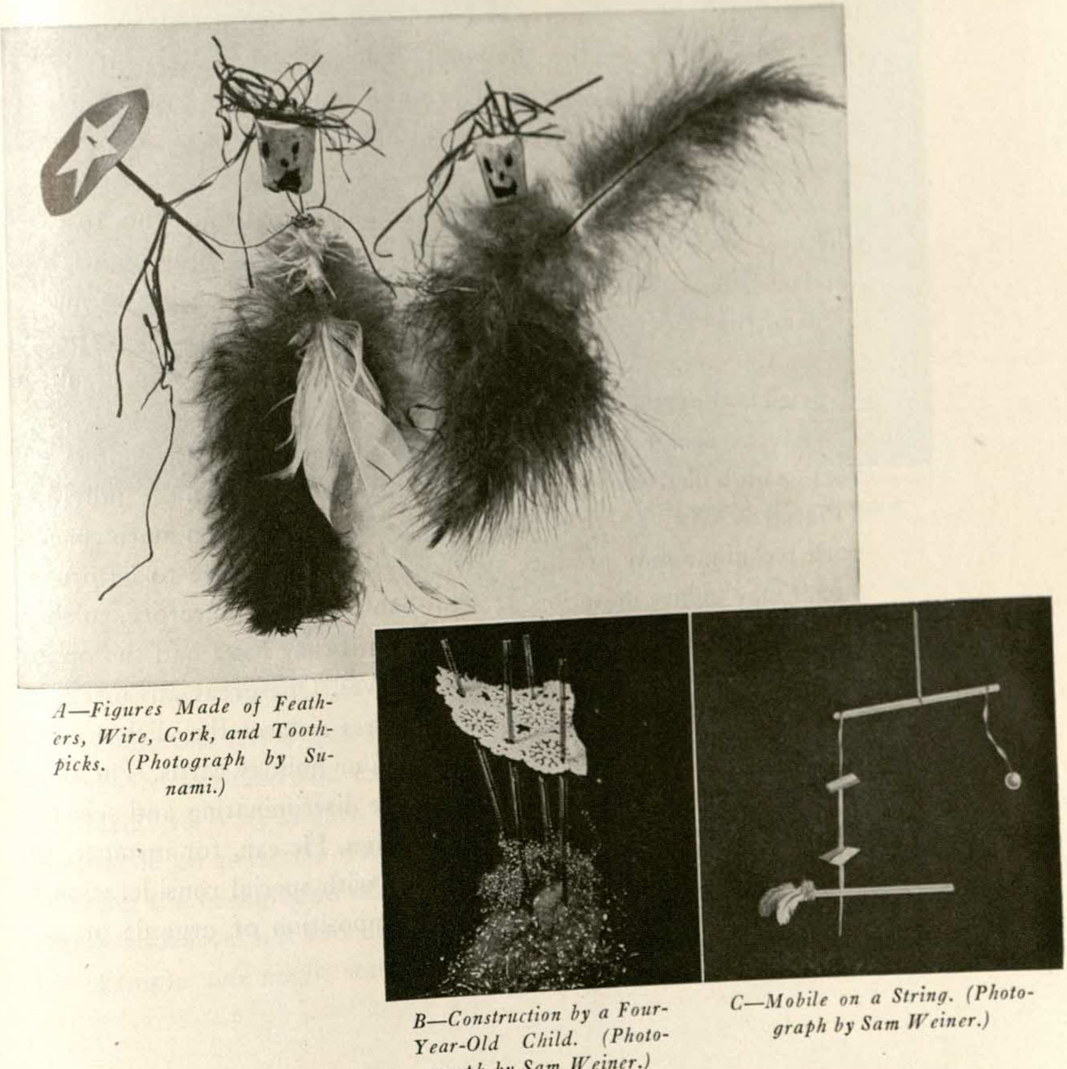


Figure 163

The suspended mobile is probably a better method than the mobile built on a base because it requires more delicate and sensitive balance of the forms. (But the balance should go beyond a consideration of weight only; color, texture, and shape should also be considered.) Nevertheless, both ways of constructing mobiles are desirable and the teacher will introduce each as she sees fit.

Advanced Projects in Making Mobiles

The making of mobiles should prove most appealing at the junior high school level, particularly for boys, where the mechanical operation is combined with the use of free imagination in design. It is most important that mechanical ingenuity and inventiveness in design work together. If the experience becomes merely one in which the child makes gadgets, the principle value of the process will be lost. True invention, however, even in the mechanical sense, is a form of art if the inventor is looking with sensitivity and wonder at the world. It is wonder and sensitivity that design seeks to develop in the individual, and the teacher should strive to choose activities which will secure this objective.



A—Figures Made of Feathers, Wire, Cork, and Toothpicks. (Photograph by Sunami.)

B—Construction by a Four-Year-Old Child. (Photograph by Sam Weiner.)

C—Mobile on a String. (Photograph by Sam Weiner.)

Plate LXXVIII. Museum of Modern Art Classes.

Projects can now be more complex than in the elementary-school level. Small electric motors from Erector sets, old victrola motors, or old clock works can all be used for motive power. The student can learn more about balance and tensions, and volume and space. Some of the projects can be directed along lines of a practical nature—such as the designing of a window display (Plate LXXIX), an amusement park, or a playground. Abstract puppets or marionettes in which the elements of color, texture, and motion are emphasized will furnish stimulating projects. But the point to stress is that design itself has appeal and does not have to depend on function for justification. In fact, it is quite the opposite. Useful objects like motor cars, vacuum cleaners, and toothbrushes are glamorized by color and styling and sold through advertisements which employ design elements to catch the eye. Such ideas can be easily grasped by the junior high school student. He will feel pleased to know that he is learning to master some of the rules which govern human behavior. Because young people of this age are aware of good craftsmanship, craftsmanship should be stressed and pursued.

At the senior high school level, collages and constructions call forth a high degree of invention and craftsmanship from the individual (Plate LXXX). There is, however, the danger that too much concern with technique may produce sterile results. The desire to be professional may induce imitation. It is probably unwise, therefore, to show students examples of works by artists until they have had the opportunity to explore the media for themselves. One great advantage of this form of expression is that its newness reduces the clichés which come by association, for example posters or holiday cards. The older student, being more mature, can be more discriminating and selective both in the choice of medium and in design. He can, for instance, use a single material such as wood or paper with special consideration to surface, weight, and thickness, in a composition of organic or geometric shapes (Plate LXXXI-B).

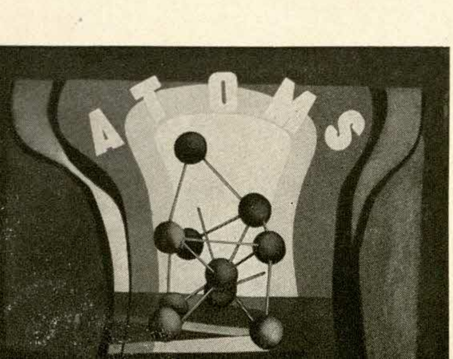
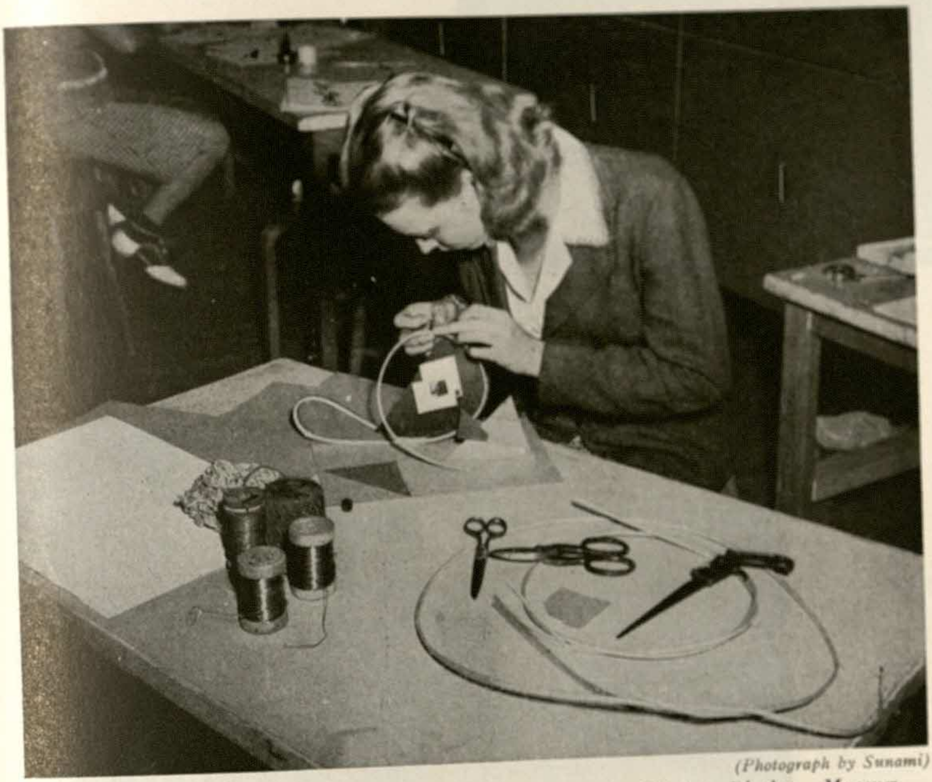


Plate LXXIX

Window Display by Eighth-Grade Boy
Atomic Structure Revolving on Turntable
Operated by Clock Works
Fieldston School
(Photograph by Sam Weiner)



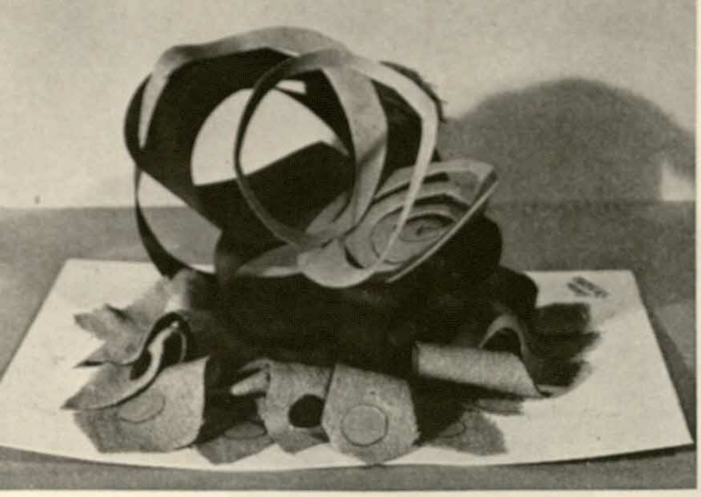
(Photograph by Sunami)

Plate LXXX—High School Girl Making a Construction for a Window Display. Museum of Modern Art Classes.

Adapting Collages and Constructions to Various Age Levels

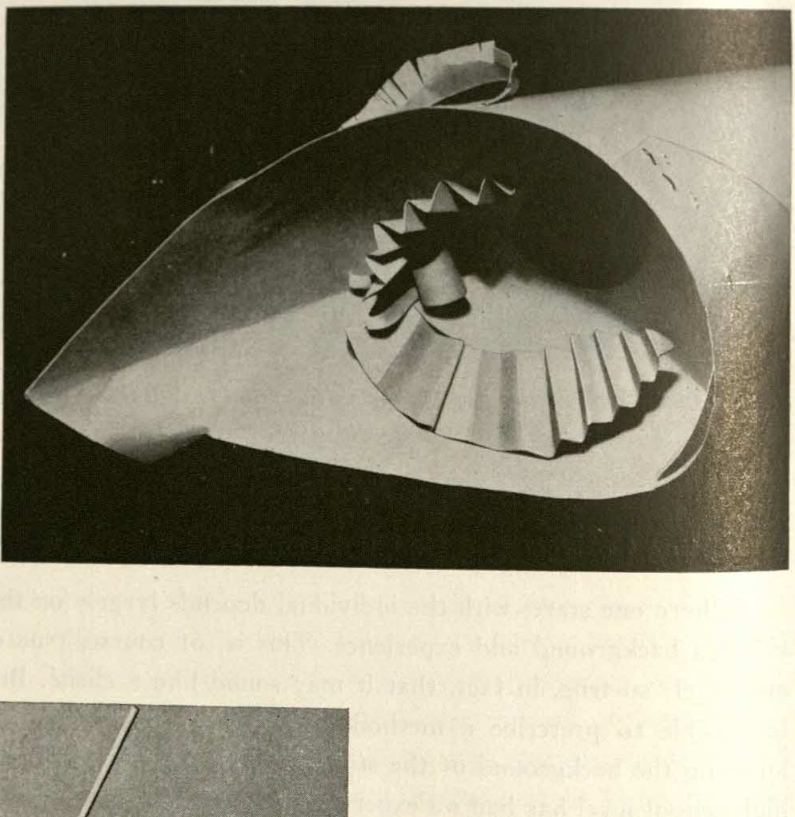
Where one starts with the individual depends largely on the individual's background and experience. This is, of course, true of any age level; so true, in fact, that it may sound like a cliché. But it is impossible to prescribe a method or indicate a procedure without knowing the background of the student. If the student on the senior high school level has had no experience whatever in making collages, for example, one might start out with the same procedures that are

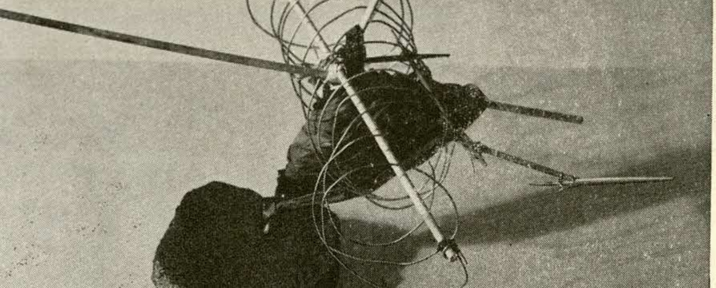
Plate LXXXI—Museum of Modern Art Classes.
(Photographs by Sunami.)



A—Construction of Paper and Fabric

B—All-Paper Construction





C—Construction of Sponge Rubber, Wire, Wood Dowels and Crepe Paper.

used with four-year-olds, but there is this important exception: the approach would be much more intellectual and abstract. Students from fourteen to seventeen years of age have had so much association with materials in their daily life that they might not find it stimulating just to be exposed to a vast assortment, even of new materials. They might think it is foolish or purposeless just to touch and feel materials. If they are informed about the psychological and aesthetic importance of materials, however, they will become very interested and absorbed in the problem. Many of the projects may also relate to the function of materials. For example, following the exercises in the personal experience of texture, pattern, and color, projects may include the making of a tactile scale of materials which would be combined in an automobile such as metal, plastic, fabric, and glass, with special attention to those which will be touched in average use. Another problem may deal with materials to be used in home decoration or in clothing. While these may seem like familiar projects, the new emphasis here is on the emotional and psychological reactions which have a bearing on the aesthetic response. Other projects may deal with the pattern and texture qualities in painting, typography, and photography. A very lively session should be spent in having the students bring in their snapshots and discuss the various textures, patterns, and color values. If these are projected on a screen the entire class can observe the effects. The photographs could be projected upside down so that the subject matter would be subordinated to the design.

Much of the poster work done in high school to promote games or other school activities can be greatly vitalized by collage effects or three-dimensional posters. There is little to be gained and perhaps much to be lost in tricky posters such as appliquéing materials to produce natural effects—for example, a portrait with real hair applied, or a landscape with materials pasted on it to simulate grass and foliage. In addition to the making of abstract constructions, three-dimensional projects may include the design of store fronts, window displays, stage sets, house models, or signs.

The real value of collages and constructions is that they help stimulate the individual's natural sense of design and revitalize the other arts. They provide a foundation to the arts in an organic and personal approach.

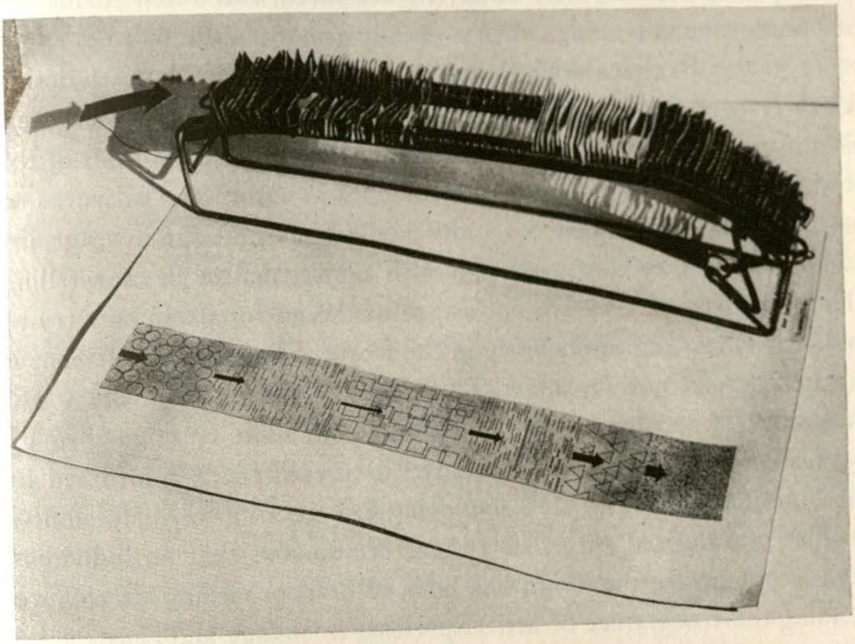
Influence of the Bauhaus

No discussion of the teaching of design and particularly of the use of collage and construction can be complete without reference to the original Bauhaus in Germany under its distinguished director, Walter Gropius, or its development in America such as the New Bauhaus in Chicago, later called the Institute of Design, founded by the late Laszlo Moholy-Nagy. Both schools were for specialists—architects and designers—but the work of the foundation course, called the preliminary course, or *Vorlehre*, influenced the teaching of design in American high schools, colleges, and art schools.

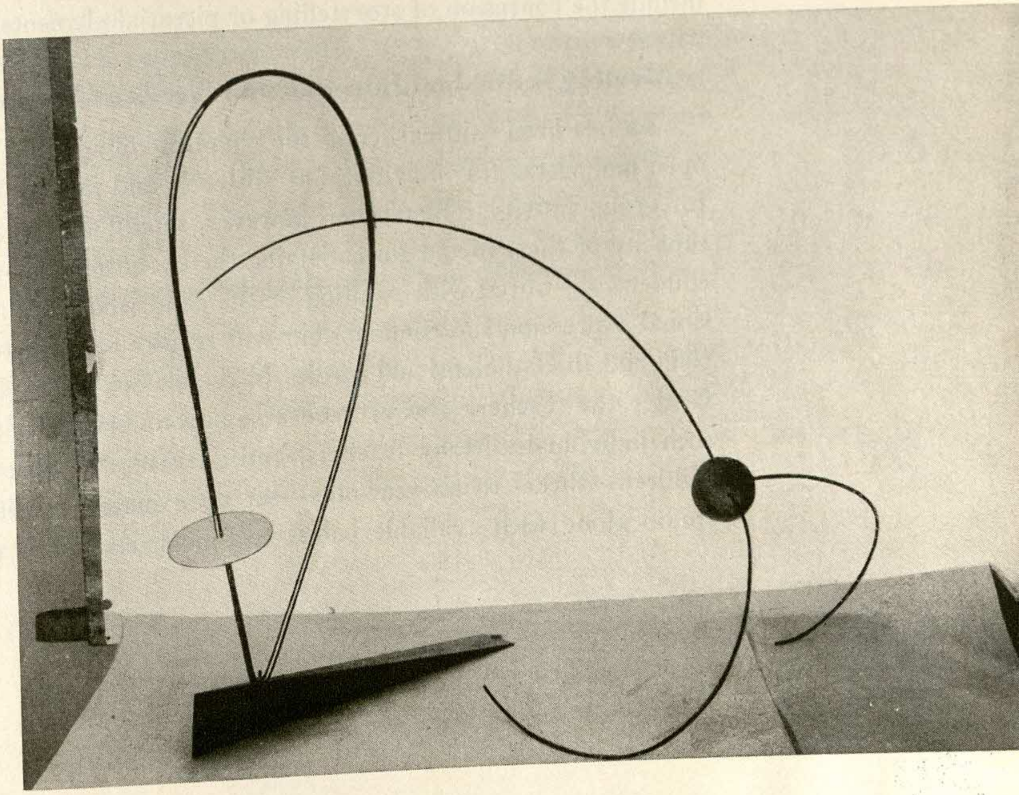
In these courses the students were made to explore the qualities of materials and to become sensitive to their appearance and structure. For example, they made tactile scales in which materials were arranged in a sequence that gave a particular sensation when the hand was rubbed over them (Plate LXXXII). Similar visual arrangements were devised which stimulated the eye. They studied the nature of materials and learned to change their appearance and tactile quality by varying the surfaces with tools, pigments, or by other means. Problems in form included the construction of volumes and shapes from flat materials such as paper or sheet metal or the combination of a variety of materials into one structure.

Most American schools and colleges adopted some form of the Bauhaus foundation courses in their general art or design teaching. In many instances this was a revolutionary or at least a welcome change from the sterile design courses in practice, but unfortunately more often than not the Bauhaus exercises were merely imitated or superimposed on old courses so that the basic emphasis on design and

Plate LXXXII—Exercises from Preliminary Course Taught by Moholy-Nagy, Bauhaus, Dessau, Germany. (From Bauhaus Catalogue, 1938, Museum of Modern Art.)



A—Study Illustrating Vibration and Pressure of Various Materials.



B—Attempt at Graphic Transcription.

visual perception was lost. Today we are faced with a new formalism of pseudo-Bauhaus design with a decadent modernistic flair.

Yet the Bauhaus foundation courses offer a concept of design which if properly developed has vitality and significance. The exercises in tactile and visual experience can awaken the sensibilities of the student to pure design as it functions both in nature and in works of art. The major problem for older adolescents and for average lay adults is that they confuse design with subject matter or storytelling elements. Because they are not aware of design for itself they try to find a literal or logical meaning in the work. When such an element is lacking they see nothing in art. They overlook the fact that the power of a work of art depends on its ability to stimulate emotion through its aesthetic means. If subject matter is present, it is reinforced by these aesthetic means, often employing exaggeration or distortion to produce the desired effect. It is therefore obvious that an individual who is not aware of design has no way of approaching or comprehending the true nature of art. Experience in collage and construction offers an excellent means of awakening and developing one's understanding of design, particularly because in their pure form they do not include the confusion of storytelling or pictorial elements.

Meeting Individual Interests and Needs at Various Levels

As has been said earlier in the chapter, collage and construction open new vistas for individuals at all levels and present new projects for group activity. The teacher, however, should also be aware of the capacity of these media for satisfying the exceptional case such as the child who is bored with painting or the child who finds a two-dimensional expression too confining but will readily respond to new materials and three-dimensional media. In the classes of the People's Art Center the teachers always have a supply of materials on hand for such individuals. Many teachers, and particularly those of younger children—three- to six-year-olds—set up a materials display in the studio along with available paints and moist clay. The practice followed is to provide a general supply of the basic materials to be used by all teachers, such as colored construction paper, straws, wire of many gauges, pipe cleaners, and colored gelatins. But particular emphasis is laid on the special materials which are secured by each teacher so as to assure wider variety and to give the teacher both a responsibility and an awareness in making the projects fit the needs of her children.

The teachers show remarkable ingenuity in securing such materials. One engages the cooperation of the local fruit vendor, who saves the colorful wrappings of oranges and other fruit, such as tissue, corrugated board, cellophane, or excelsior, and of the grocer, who collects egg boxes and fillers for her. Another teacher visits the notions counter, or the hardware store, or the five-and-ten-cent store, and makes her selection. A third goes to millinery or display establishments and collects odd bits or throwaways. An enterprising teacher has secured promises from the department stores to save the decorations from their holiday displays after they have dismantled them. A weekend visitor to the seashore brings in sea shells, pebbles, grasses, and bird feathers picked up along the beach. All teachers, however, remain on the alert peering into shop windows and examining trash cans to augment their supply. Sometimes they arouse the curiosity of the local constabulary with the inspection of the refuse cans, or beat the Department of Sanitation truck to some gay tangle of tinsel or decorative paper by minutes. This same curiosity is transferred to the children, who add their offerings with pride.

A Summary of Materials and Their Sources

Following is a summary of the kinds of materials suited to the making of collages and constructions and the places where they may be found. Of course the whole object of the chapter and the value of this creative medium would be jeopardized if the teacher should regard this list as complete or if it should reduce in any way the teacher's own searching and discovery.

About the Home:

Gift wrappings, envelope linings, canceled stamps, printed fabrics, buttons, yarn, string, beads, sequins, bottle caps, metal foil, corks, steel wool, old keys, dried chicken bones and fishbones, clothes hangers, and Christmas tree ornaments.

In the School:

From the carpentry shop: sawdust, shavings, wood scraps, corrugated board and boxes, and wire.

From the homemaking shop: yarn, thread, empty spools, swatches of leftover dress goods and cloth, buttons, pins, and ribbon.

From Nature:

Leaves, bark, twigs, grasses, driftwood, shells, fungus, dried moss, sand, pebbles, bird feathers, and seaweed.

From Local Stores (five-and-ten, hardware, and dry-goods stores, and decorating shops):

Sequins of various sizes, colors, and shapes; beads; feathers; veiling; wire mesh; chicken wire; plastic shower-curtain materials; clothespins; and sponge rubber and natural sponge. Plastics: plastic sheet of various gauges (expensive), and plastic cord and bands. Wire: iron, copper, and brass wire of different gauges. Coinette ribbon, wooden buttons and balls, and ping-pong balls.

Art-Materials and General Supply Houses (in quantity):

Colored construction paper 6″ x 9″ and 9″ x 12″ or larger; oilcloth and shower-curtain material; corrugated paper covered one side in rolls (colored) and rigid sheets; and string of various colors and thicknesses. Fabric in solid colors, patterned, and of various textures; yarn of various colors, thicknesses, and textures; tagboard, Bristol board, illustration board, backing board, and mounting board; soda straws, natural and colored and made of paper and cellophane;

colored gelatins and cellophane; plastic in tubes and rods of various sizes; sheet plastic in colors which catch and reflect the light (expensive); wallboard or building board of any kind (Celotex, Masonite, Homosote, and plywood of any thickness); wallpaper, both figured and in solid colors (sample books may be purchased or secured free of charge); buttons, beads, pegs, and dowels of various thicknesses.

The Test of the Art Experience

The test of the art experience is perhaps the extent to which it makes the individual sensitive to the aesthetic values in living and in his environment (Plate LXXXIII). This is an objective of working with collages and constructions because one encounters materials every day and may become aware of their ingenious or imaginative application. It is a quality that is difficult to evaluate because the intensity of one's emotional reactions cannot be measured, and also because many of one's responses are unconscious. Yet there are sufficient instances which will give the teacher evidence that the child's awareness is developing and assure her that the creative experience is spreading beyond the satisfaction of the initial activity in class. For example, one November day a teacher told a class of five- and six-year-olds that they could find examples of beautiful patterns and textures in nature. A week later a five-year-old boy brought a single leaf clutched in his hand and said, "I looked all through Central Park last Sunday and this is the very last leaf left. Isn't it beautiful?" Not all examples are as definite or perhaps as touching as this story, but they are nevertheless evidence that art is working beyond the classroom and into the life of the child. That is of course the ultimate achievement of creative education—the touching of the life of every child in subtle or large ways. The underlying concept of creating collages and constructions is in the awakening of the tactile and visual sensations and their refinement so that life becomes richer and more full of meaning.

(Photograph by Marion Palfi)

Plate LXXXIII—An aim of creating collages and constructions is the development of awareness to art values in everyday living.

Chapter Eight

The Child as Designer and Craftsman

The Child is an Innate Builder and Designer

The young child has an innate sense of design, a gift manifested at a very early age in the way the child arranges his blocks, carefully making ornamental flat patterns on the floor, or building them in structural forms. His paintings and drawings also reveal this sense in the well-balanced masses of color and dark and light, in the rhythmic line movements, or in the pattern arrangements of strokes, dots, and lines. At this age (three to six years old), the child is similar to the abstractionist, because he works in abstract lines, shapes, and masses. He is not concerned with realism or representation; he is a natural designer.

The instinctive sense of art of the child at this early stage has been mentioned in relation to all the other expressions of art discussed, and we now emphasize that the young child possesses the same power in designing. While the instructor cannot directly teach the young child design, he can do much to foster its growth by encouraging the child, by giving him the proper materials to work with, and by making the whole environment stimulating and conducive to creative expression.

The Sense of Design Seems to Diminish at Adolescence

Among most children, however, this fine feeling for design seems to diminish as they grow up and it is at its lowest ebb at adolescence. While this change is probably due to a variety of circumstances, the major factors in the training of the child are largely responsible for it.

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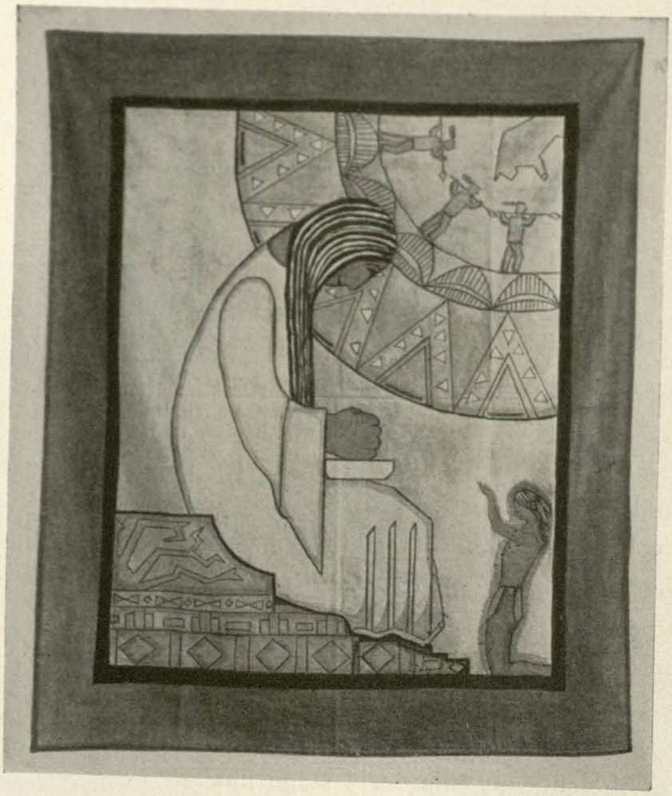
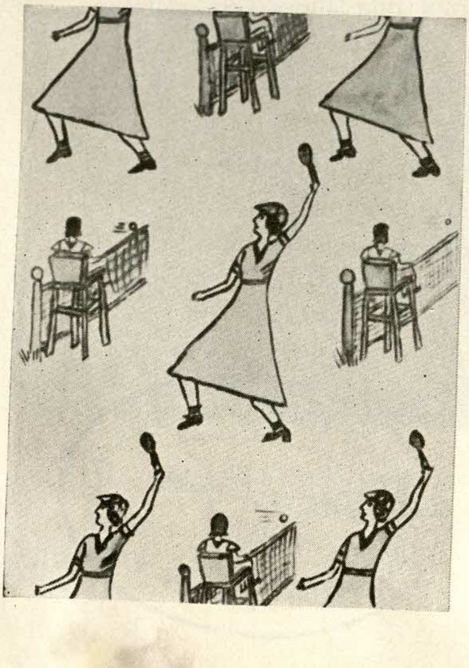
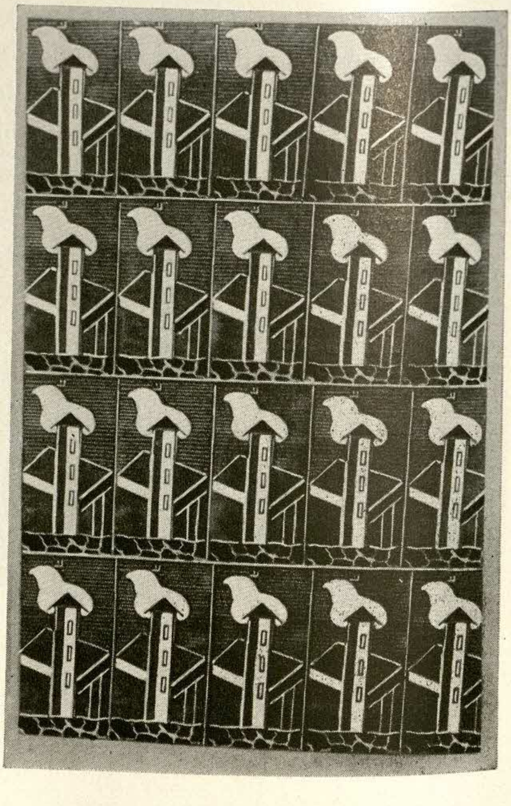


Plate LXXXIV
(Left)
Batik Designed and Rendered by Tenth Grade Boy

(Lower Left)
All Over Pattern, Using a Sports Motif; by an Eighth Grade Student (Executed on cloth with subject matter derived from the child's own experience)

(Below)
Block Printed Tapestry in Black and Buff; Ninth Grade Girl (working with actual materials, not just a paper plan)





Common Teaching Practices Inhibit Sense of Design

The first practice which is responsible is the neglect in teaching design in the crafts shops and industrial arts courses in the majority of schools over the country. Most teachers of such courses stress the development of skills and technical perfection, and totally ignore the factor of design. As a result, the child's work lacks aesthetic quality, or reflects the bad taste the child has acquired from his environment. Many teachers permit or encourage the imitation of commercial products and professional work until the child has no faith in his own talent and becomes hopelessly confused and inhibited.

Every year there are thousands of copies of period furniture made in school workshops, and as many copies of ornate jewelry and rococo pottery made in crafts shops, that do not possess any evidence of aesthetic quality or child originality.

The second factor responsible for weakening the child's native sense of design is the nature of teaching design now in general practice. One phase of it has been criticised before: the imposing of fixed formulas on the child as a substitute for teaching him design values. These formulas are characterized by conventionalized motifs, borders, and surface patterns which are so directed by the teacher that they all look alike although they are made by different individuals. This process tends to stagnate rather than to develop any creative potentialities in the child. There is another element in the process which defeats any creative intentions that these arts may possess. While the problems are called problems in applied design, they are not applied to anything, but are merely designs on paper which finally come to an end in carefully lettered portfolios. Literally millions of designs are made in art classes for textiles that are never printed, for pottery that is never modeled, and for furniture and jewelry that are never constructed. It seems that there was no intention on the part of the teachers or those who framed the curriculum to have the experience in design become a reality; therefore, the child has no opportunity of realizing the fulfillment of his idea in the satisfaction of activity or the production of a work of art. Teaching through exercises in design, for objects that are never made, seems as futile and regrettable as teaching crafts without giving any attention to design. Both result in the frustration of the child's native power.

Another element in the practice of teaching design in current crafts courses which is contrary to normal creative growth, is the making of designs for a crafts problem before the child has had any experience in the craft. How can a child, or any one for that matter, design intelligently and sensitively for an art or a craft in which he has had no experience? A professional or an accomplished artist would not consider designing for a medium which he had not mastered, because the nature and behavior of the medium condition the design. No intelligent person would ask an architect who had no knowledge of construction or materials to design a house for him, yet teachers are daily making similar demands of children when they require them to create designs for crafts in which they have never had experience.

A plan or design made on paper is but an abstract representation of an idea and implies a great knowledge of the materials, media, and methods that are required in the realization of that idea in visual form or as a completed object. Therefore, it seems that common methods of teaching design are "putting the cart before the horse," by asking the child to make plans before he has had adequate experience in the medium. The educative process works in reverse order: from actual experience in a medium or craft to the abstract concept of the design or plan.

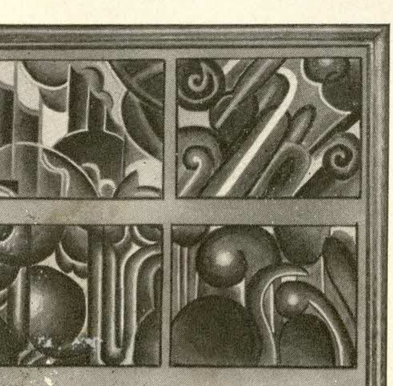


Plate LXXXV

Design Study Emphasizing Various Line Rhythms; Tenth Grade Students Fieldston School.

Order of Learning Design and Its Adaptation to Child Development

The process of teaching design would follow such a sequence as this: first, a period of free exploration in a medium to discover its potentialities; second, designing in the medium in a trial-and-error process by applying the design values directly to the medium; third, the making of a design for a craft after the young artist has gained considerable mastery of it. In relation to the development of the child-artist, these steps would respectively apply to the following periods: Free exploration in the primary grades. Designing in materials with direct emphasis on the application of design values in the elementary and junior high school grades. The junior high school period would allow for a more extensive experience in many crafts, as well as a more intensive experience in an individual craft (Plate LXXXVI). Designing on paper for an object to be constructed later in a particular medium is appropriate at the high school level, in the senior high school, that is, provided the student has had previous experience in the medium.

In summary, then, the paper plan of teaching design is contrary to the order of learning, and seemingly an effort without good purpose. It belongs to an advanced stage of the learning process and has real significance only to the experienced craftsman who is able to visualize what the plan represents. The suggested process of designing in the materials of a craft implies a new concept of teaching design, and will be discussed later.

Design and Manual Expression Both Make up the Craft Experience

There seem to be two misapprehensions on the teacher's part which cause the neglect in teaching design in shop and industrial arts and the over-emphasis on skill and technique. First, most teachers teach as though skill and design are two separate experiences, of which skill comes first and is most important. Second, most teachers

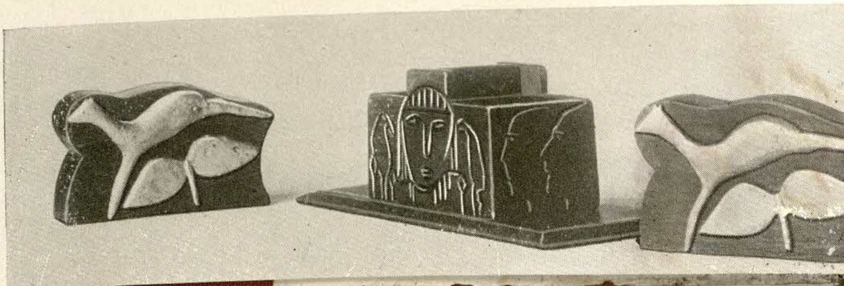


Plate LXXXVI

Cigarette Box and Book Ends by Ninth Grade Boys. (Carving on the box is incised and the bas-relief on the walnut book ends is cast in lead and antimony and applied. Fieldston School.

believe that a sense of design is a special and unattainable talent, which few children possess. Therefore, teachers often do not attempt to develop the power of design in the average child. Some people seem to have a more ready response to design than others, and are therefore regarded as talented, but the sense of design is common to all to some degree and needs only the proper guidance and encouragement to draw it out. Beauty is not a mysterious and indefinable entity; it is the reaction of the elements of design upon awakened emotions. In other words, an object is beautiful from the aesthetic standpoint because it possesses fine proportions, form, color, texture, material, or workmanship. Design is the distinguishing character of a craft and the quality that raises it from mere skill to the level of fine art. Those courses that develop only manual skill are depriving the child of the most precious value in the art experience.

A New Concept of Teaching Design

Thus far we have established two conditions necessary to teaching design: first, that design and manual expression should be part of the same experience and, second, that the design or plan should not precede experience or activity in a craft.

The new concept of acquiring a sense of design related to the crafts or industrial arts, therefore, is through manipulation and experience in them, that is, the child designs in the materials because the materials condition the nature of the design in any art. For example, the child who originates forms for pottery must work directly in clay or, if he is interested in weaving, he works directly on the loom. It may be necessary, as has been suggested, for the child to explore the crafts before he attempts any designing of his own. He may make small samples of weaving on the loom with various wools and colors to discover the potentialities of the medium, or play with clay in simple forms until he has acquired the feel and power of handling it. Otherwise the child will come to the material with a preconceived design, a plan probably wholly unsuited to it.

Even though a design appears pleasing on paper, it may be a failure in the medium for which it was intended. Much of the abuse in industrial design is due to the fact that the designs, instead of growing out of the material, are applied to the materials.

Form Grows Out of Materials

We can easily understand the principle of form growing out of the material if we watch a master potter at work. He raises the form from his lump of clay and studies it as it grows under his fingers, changing the shape as necessity and his aesthetic judgment demand. He knows by touch whether the clay is too thin or too thick, and experience tells him the appropriate size and shape; he does what the clay demands because he knows clay and does not attempt to make it appear like metal or wood; he has learned that design is at its best when it follows the dictates of its material.

The Mexican weaver provides another example of design growing out of material. He has no fixed plan for his rug or serape, only a general idea of what he desires, and he improvises the design as he progresses, adding two strands of one color or three of another as the design requires. Throughout the process he studies his work for texture, pattern, and color until he has produced an original work of art. Thus his aesthetic values guide him, and he is not limited by them.

In the same manner the child-artist can acquire a feeling and command of the aesthetic values through working in the materials. Design and execution become fused into a single experience. Like the potter or weaver, he will begin experimentally and, though he will have an idea of shape or design in his mind's eye, his aesthetic judgment and the material will guide his results. When he has gained experience and power, he will be able to make and use paper plans and designs, for then they will have significance to him. For example, the layman has no appreciation of a blueprint, though it has great significance to the architect, who is able to visualize the building it represents, while the layman sees only white lines on blue paper. How much wider will be the experience of the child who conceives and constructs with materials, from that of the child who copies his craft or never experiences his design in material form.

The Design Concept

Earlier in this chapter, we mentioned that sensitiveness and power in designing could be acquired by the average, as well as the gifted child. The aim of education should be to so develop the child's aesthetic judgment and sensibilities that he, like the artist, will come to design intuitively. This end can be attained if the child has continuous conscious experience in aesthetic values, which means that he should recognize the problems of design at hand and work them out through his materials. After considerable experience with these values, the child-artist will be able to use his knowledge of design subconsciously as the artist or young child does.

In the use of the aesthetic values, the artist employs both feeling and judgment. His feeling tells him whether or not an object pleases him, and his judgment weighs abstract values, as volume, proportion, line, and color. Thus the feeling may be intuitive, while the judgment may be a result of definite calculation and experiment. Judgment which results from actual calculation through the use of mathematics may be called mathematical judgment for want of a better name to distinguish it from choice made through intuition. Mathematics and art have much in common in respect to aesthetic values. It is known that artists and architects employ mathematics as a basis for solving their problems in design. The ancient Greeks planned their architecture on exact geometric proportions, as did many masters of the Renaissance in the composition of their paintings.[1]

Let us take a simple example of the use of the aesthetic values and mathematical judgment, and analyze the way a designer plans his work. In making a simple chest of drawers the first consideration is function. The size and shape of the chest as well as the size and shape of the drawers, will be determined by the use to which they are to be put. With the functional elements in mind, the designer works out the aesthetic problem. He may first analyze the form. In doing so, he considers not only the contour but relates the proportions of height, width, and depth. He may calculate these relationships approximately with his eye or work them out exactly in figures; but whichever method he uses, if the object is in good design, the relationships will be in mathematical ratio.

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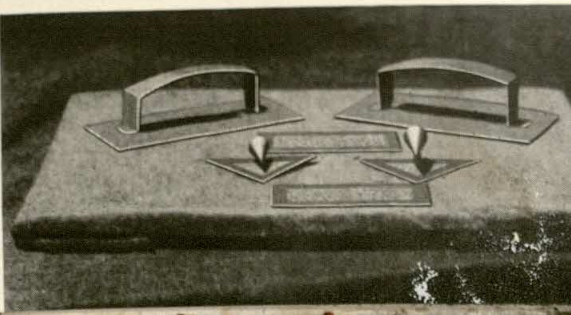
[1] Sufficient evidence and many examples of this point of view are given in Jay Hambidge, *Dynamic Symmetry in Composition* (New York: Brentano's, 1923) and Claude Bragdon, *The Beautiful Necessity* (New York: Alfred A. Knopf, 1910).

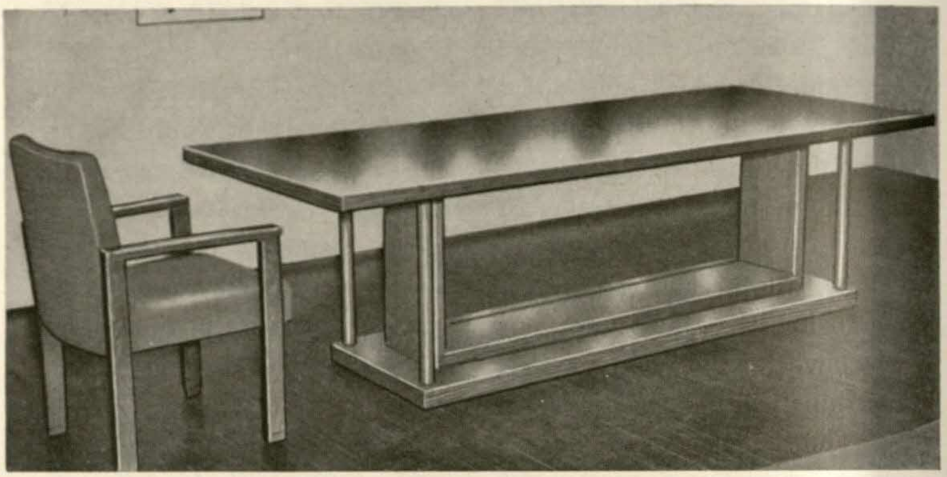
The designer now divides the chest into drawers. He may make all the drawers of equal width, but his feeling tells him that the result would be monotonous. If he divides them into irregular widths indiscriminately, they may prove unrelated. He therefore divides them into relative proportions; one large drawer, then a slightly smaller one, perhaps a third smaller than the first; the next drawer still smaller, perhaps one-half the first, and so on in consecutive order. Of course, there are many other possible combinations, as an alternation of a small and large drawer, or two large drawers and one small one, but the illustration serves as an example of the division of space. Function again may help him to determine the relative proportions and positions of the drawers, for some may need to be large while others must be small, to accommodate large or small objects. The arrangement of the drawer pulls will also involve a simple problem of space division; they may be placed at any proportionate distance in from the outer edges of the drawer.

The next step is the color and finish. Since a good designer has an appreciation of materials, he has probably chosen his wood for its color and pattern. The important consideration is to keep the color in harmony with the simplicity of the chest. Careless use of color may destroy the unity of an object. For example, if an unfeeling worker painted the chest, drawers, and knobs each a different

Plate LXXXVII

Drawer Pulls and Handles Designed and Executed for a Piece of Furniture; Tenth Grade Boy





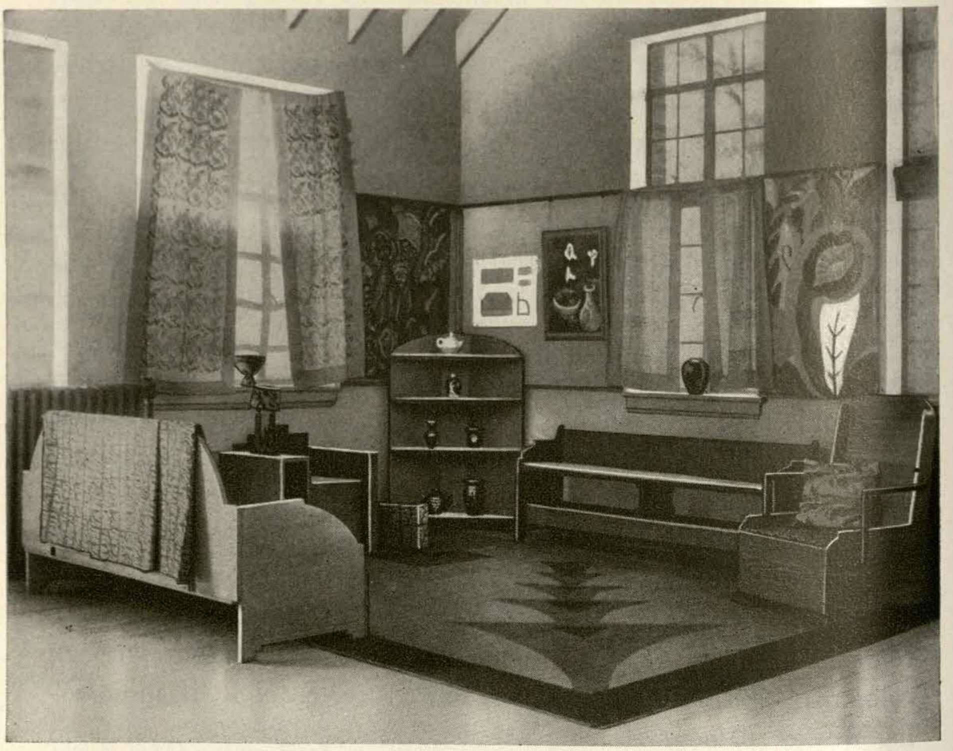


Plate LXXXVIII—(Above) Table Designed for the Social Room. (Below) Decoration and Furnishing of a Club Room for Girls, Designed and Executed by Junior High School Students, The Fieldston School. Objects Designed in the Art Room and Constructed in the Shops.

color, the chest would lose its unity in spite of its beautiful proportions. However, if the artist desires a variety of color, he might achieve this result by the use of related colors or dark and light values, such as staining the chest light walnut and the edges and drawer pulls in dark walnut. He might use a combination of light and dark woods, but he would do best to regard simplicity as his most desirable objective and let the grain, color, or the finish of the material produce the color effect.

This use of the mathematical judgment in the experience in design should be extremely helpful to the teacher of shop or crafts in instructing the beginner to design, because at the outset of every problem the student will be involved with consideration of size and proportion (Plate LXXXVIII). It should obviate any vagueness or sentimental approach in design and reduce the tendency to copy. It gives the student the power of analyzing and developing his own designs through his own judgment because it does not make him dependent on a formula or set principle. Of course, the teacher must be careful not to over-emphasize the mathematics involved or to demand calculations that are too exact, as they may produce mechanical or stereotyped results. In the work of the older child and young adolescent, such calculations should be approximate, made with the eye and feeling rather than with the ruler. For example, in designing a vase the student will relate the width to the height, and the base to the top, to see if they are in proportion. As the individual approaches maturity, probably at late adolescence when the power in abstract concepts develops, the mathematical approach may become more applicable and useful.

Understanding Design

Design is based on such aesthetic values as line, form, and color, texture, pattern, and material. Without a sensitiveness to these values a true appreciation or a high standard of production in the arts is not possible. The difference between the artist and the layman is

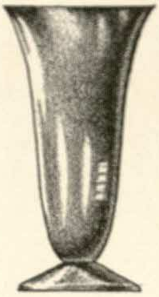


Figure 164

in their experience and consciousness of the aesthetic values. They both look at art, but see differently, the artist with a knowing and perceptive eye, the layman with an innocent and untrained eye. In a work of art, the artist seeks and enjoys the aesthetic elements, while the layman is left unmoved because there is nothing that stimulates his consciousness. He associates beauty with naturalism and realism because nature and reality are the only sources where he has satisfied his desire for beauty. He therefore enjoys the works that literally represent nature or realistic objects in preference to those based on art values.

This same undeveloped taste on the part of the realistic and sentimental artist and craftsman is accountable for the multitude of objects of bad art on the market and in the home. The reader can readily call to mind many atrocities which he has encountered in his experience, such as butterfly forms used in jewelry, American beauties on vases or rugs, nude figures dramatically draped with vines, supporting clocks or electric lamps, and a thousand other examples that irk the sensibilities of the artist. These monstrosities are not the products of native bad taste, as is often supposed, but of undeveloped or misdirected taste.

Figure 165

Design, Realism, and Naturalism

The good artist will not seek to imitate or copy nature. This is not a reflection on the beauty of nature, but on the judgment of the artist. Nature cannot be improved upon or successfully imitated. The painter who has represented realistic roses on a vase has probably achieved a clever and difficult task, but his achievement does not go beyond mere representation. After his skill has been recognized and admired there is nothing left to enjoy. The artist has not put anything of himself or his individuality into the work, and any other skilled workman might have done as well.

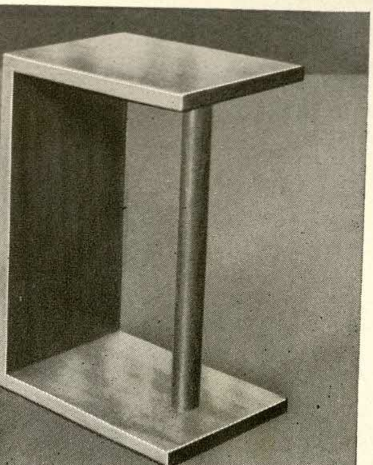


Plate LXXXIX

Side table designed by Eleventh Grade Student

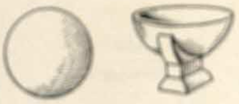


Figure 167

The Use of the Forms of Nature

The real artist does not copy nature, he is inspired by it. It may suggest a contour or pattern for design, but it seldom gives him the image completely. In fact, it is better if the natural form which inspired the work cannot be recognized in the finished work, but only felt in form and line. For example, an Easter lily may suggest the form for a long, tapering vase, but the average observer may never recognize the motive that inspired it, though the vase may give him the same feeling of slender grace that he would get from looking at the flower (Figure 164). Likewise the cup shape of the tulip may suggest a low bowl and, when finished, the bowl may have the same sort of unity and enclosing form, though it does not represent the tulip at all (Figure 165). Thus the artist borrows the spirit and character of the forms of nature and transforms them through his aesthetic sense into the forms of his craft. Because each artist is different, and because each interprets forms through his individual way of seeing, the results are different, though they may be inspired by the same subject.

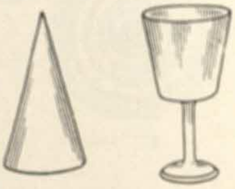


Figure 168

Geometric and Abstract Form in Design

It will be helpful for the young artist to work with geometric forms and simple abstract elements in design before he attempts to use naturalistic motifs, so that he will acquire a good sense of, as well as a working knowledge of, the aesthetic values. He should try to visualize his design in pure geometric forms, such as cones, cubes, spheres, or rectangular solids, and then combine them (Figures 166-170). In his use of line, he will be concerned with the pure line elements and their combinations, as the straight, the horizontal, the vertical, the oblique, and the curve, and he will avoid meaningless scrolls and curlicues that confuse form.

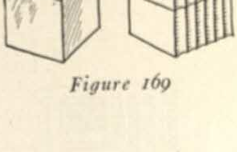


Figure 169

In the achievement of the modern designer, we find this concept and use of pure design motives and geometric form. He has reduced design in all crafts to its simplest terms of form and line.

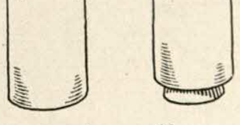


Figure 166

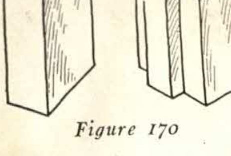


Figure 170

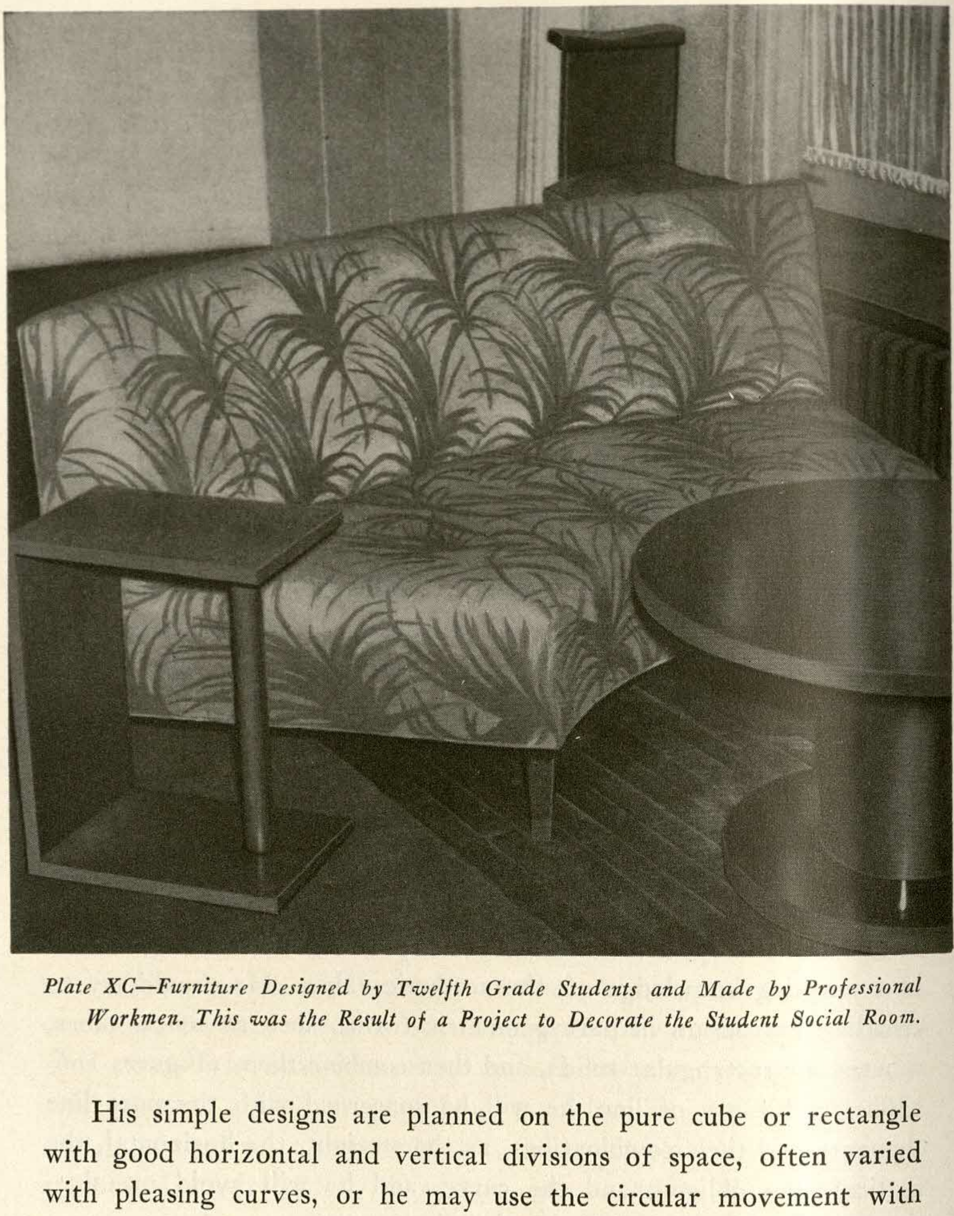


Plate XC—Furniture Designed by Twelfth Grade Students and Made by Professional Workmen. This was the Result of a Project to Decorate the Student Social Room.

His simple designs are planned on the pure cube or rectangle with good horizontal and vertical divisions of space, often varied with pleasing curves, or he may use the circular movement with the same emphasis and simplicity.

In ceramics and metal work he employs the pure cone, sphere, or hemisphere, or the rectangular solids, with the same simplicity, ingeniously opposing the forms with the curved or straight line in the use of spouts or handles.

Modern jewelry also is composed of repetitions and variations of rectangles, triangles, circles, or squares in flat design, and in cylinders, cubes, spheres, or hemispheres in the round.

Let us follow the designer in the working out of a tea set in pewter or silver, and see how he develops and relates his forms. We shall assume that he has decided to use the sphere as the form governing his design. The teapot will suggest a complete sphere resting on a small hemisphere. The cover will be formed by cutting the sphere off one-fifth of the way from the top and fitting it with a curved ebonite handle. The spout will be a curve in proportion to the pot, and the handle a large, sweeping curve, but straight at the top for variety against the dominating use of the curve (Figure 171). The creamer will be a hemisphere resting on a small, inverted hemisphere with a harmonious bulge for the spout and a handle, like the teapot's, in proportion to the creamer (Figure 172). The sugar bowl will be a sphere, with the cover formed by cutting the sphere off a third of the way from the top and fixing it with ebonite handles. The handles will be like that of the creamer (Figure 173). A tray can be designed from a perfect circle with a raised edge.

In like manner the designer may take any of the conventional geometric forms and create numerous designs through the use of his originative power.

Let us illustrate this principle further by a few designs in jewelry. Let us assume that we have three stones, one round, one square, and one lozenge shaped, which are to be set as brooches. The round stone can be set on a silver disc, slightly domed, with concentric circles of wire progressively spaced about the stone to the edge of the pin. The edge can be beaded for variety (Figure 174). The square stone can be set into a rectangular or square shape with broken lines of wires soldered at intervals between the stone and the edge to emphasize the shape of the stone (Figures 175 and

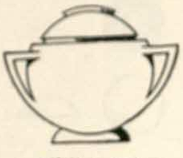


Figure 173

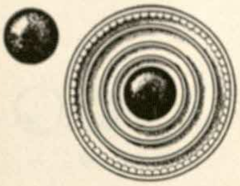


Figure 174

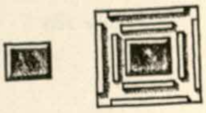


Figure 175

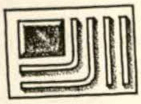


Figure 176

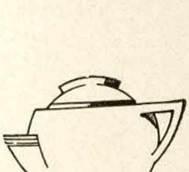


Figure 171

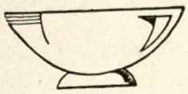


Figure 172

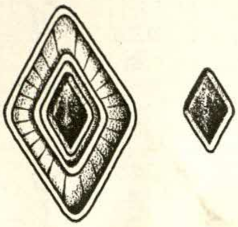


Figure 177

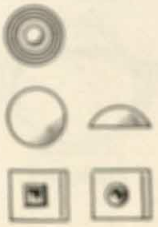


Figure 178

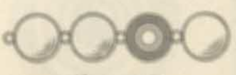


Figure 179

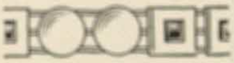


Figure 180

176). Likewise the lozenge-shaped stone may have a background of similar shape with rhythmical lines chased, or in wires soldered to the surface (Figure 177).

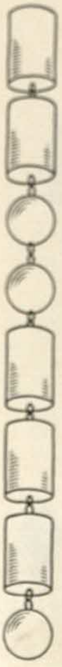
The use of repetition and rhythm of the geometric forms makes excellent problems of design for necklaces or chains. For example, units may be made by concentric rings with a bead for a center, half-domes or squares set with round or square stones (Figure 178). These units may be linked together in alternating groups, as two domes and a unit of concentric rings, or three square units and two round ones (Figures 179 and 180). The same method may be followed with small cylinders and balls, alternating between groups (Figures 181, 182, 183).

It must be recognized that in every illustration the designer has used his sense of design values, and has neither imitated a realistic form or followed a given formula. The examples should serve as a stimulus for many possibilities in other crafts.

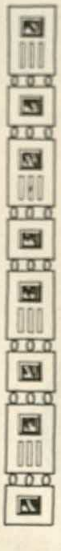
Visualizing Form Through Models

When the material to be used is too stubborn or precious to work in directly, for example, copper, silver, or wood, the young artist may visualize his form by making a paper or plasteline model from which to construct his object. Plasteline is chosen because it is a wax medium and therefore is more permanent in nature and because it remains pliable and allows the student to work on it again and again without materially changing its consistency. Previous experience in the craft and its materials will be necessary before he attempts to make a model, else he is apt to make it too complex or inadequate for the material.

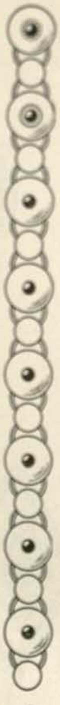
The paper and plasteline models are inexpensive and can be made simply. The paper model is made from patterns geometrically developed. Each form of the object is laid out in a pattern and cut out, pasted, and assembled. Let us pretend that a child is making a



181



182



183

pewter desk lamp, composed of a conical shade mounted on a cubical base. The cone is developed and assembled as follows:

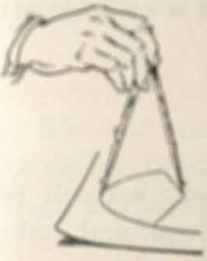


Figure 184

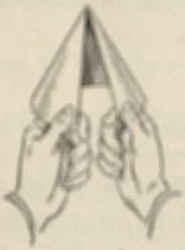


Figure 185

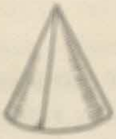


Figure 186

Now the base is designed and developed thus:

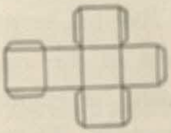


Figure 187

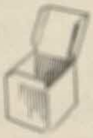


Figure 188

Completed model:

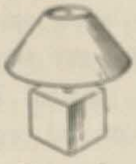


Figure 189

When a difficult problem in development is encountered the student may find that his geometry teacher will assist him. In this way the problem will provide an excellent means of relating the child's geometry and craft study.

The plasteline model is also easily made, for it is constructed in a solid form, similar to the clay forms, and is then smoothed down with modeling tools. If a perfect shape is desired, such as a sphere or a cone, after he has started his form in the rough, the child may turn it smooth on a potter's wheel or a decorator's wheel, with his clay tools. Small wax models are more convenient than large ones, for they conserve material, time, and energy.

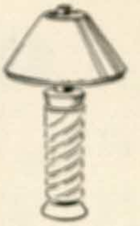


Figure 190

Models should be of great help in originating designs for the wood and metal crafts, where objects require great time and effort in the making, and where the two-dimensional plan is an inadequate basis for visualizing form.

Form and Function in Design

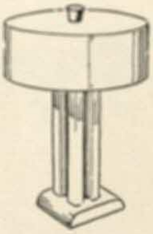


Figure 191

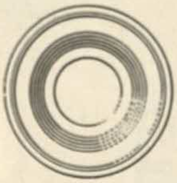


Figure 192

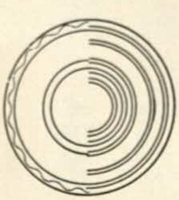


Figure 193

In designing for a craft, the artist must consider not only the aesthetic values of the object, but also the use and structural qualifications of that object (Figures 190 and 191). The modern industrial designer considers function and structure as the fundamental factors of his aesthetic problem upon which he bases his design. He describes this as "form fitting function." By this term he means that the design of an object should conform to the use and structure of that object, and that nothing should be employed in the design that does not serve its use or structure. Therefore, false cornices on buildings, paneled walls, and ornate carving added to furniture, are not legitimate in the opinion of the modern designer because they do not perform any service to the structure. From this point of view the term "applied design" is obsolete; design is not applied but is an inherent and organic part of structure. The modern designer, therefore, visualizes form and design in terms of the structure of the object and employs nothing that does not emphasize the structure visually or actually.

This point of view may seem extreme to the reader, just as modern design often seems both extreme and severe. He may be able to cite many masterpieces of the past in which the design was not functional yet it enhanced the beauty of a work. It is always well to remember that what was desirable and practical in the past may not fit today's needs. The designer must consider psychological as well as functional change. Nevertheless, the principle provides a fundamental approach to the concept of design and reduces it to a simplicity of form and structure which can be easily conceived and

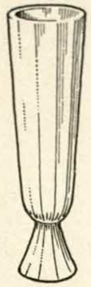


Figure 194

manipulated by the young mind. This way of conceiving design is based on neither formula nor fancy, but on aesthetic and functional values.

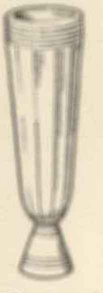


Figure 196

Decoration to Emphasize Form

The decoration of an object can enhance or destroy its form. In the use of decoration two considerations are necessary: first, the design should demand its use, and second, the decoration should fit the form. By fitting the form is meant that the decoration should follow the rhythm of the form and not oppose or confuse it. For example, round plates or dishes require decorations with circular movement, and not vertical or horizontal lines running counter to its structure (Figures 192 and 193). Likewise a long, tapering vase requires lines in vertical movement to emphasize its grace (Figure 194). Often two movements in decoration, a vertical and a lateral, are helpful in emphasizing form; one to give height and the other to give width to a three-dimensional object. A vase may have lines running around it as well as from top to bottom (Figure 196). It is advisable that the young artist first work with abstract lines and shapes that conform with the general structure of his object before he attempts the use of natural motifs. When he is ready for their use, he must exercise the same selectiveness and feeling that he used when he employed nature motifs in designing form. For instance, he will not copy realistic leaves or flowers on his vase or bowl, as they will detract from its simple structure, but he will use them as rhythmical, symbolic motifs to emphasize structure. Referring to the illustration in which the tulip suggested the form for the bowl, the outlines or shapes of petals may be suggested on the bowl as decoration to emphasize its structure (Figure 195). Where an all-over pattern is desired, the decoration will, of course, not follow the form, but should be unobtrusive so as not to detract from it. When natural forms are used, they should be simplified in design and color, giving a flat and ornamental appearance (Figures 197,

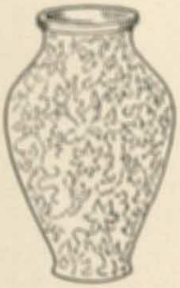


Figure 197

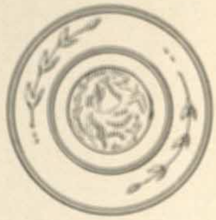


Figure 198

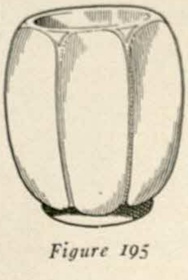


Figure 195

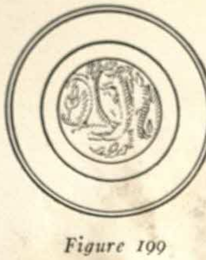


Figure 199

198, 199). The merit of surface pattern is that the motifs are so closely woven as to give a solid moving and unbroken surface; no motif should stand out inharmoniously in color or pattern.

The Child as Designer and Craftsman

We began this chapter by saying that the child is an innate designer and builder, and that while the constructive sense persisted throughout the child's development, the instinctive sense of design was often lost somewhere in the early years. The only way that this instinct can be kept alive is by consistent exercise in the various crafts and their media throughout the child's education. When the child's native impulse has been atrophied through disuse, the teacher may revive it by stimulating materials and processes in the crafts with emphasis on original design.

The New Concept at Work

Putting the new concept to work is not a simple matter. All that has been said in the chapter may still go awry because design involves many intangibles. In the first place the individual, his particular sensitivity for one thing or another, his background, and his aesthetic capacity are involved. There have been hundreds of methods of teaching design and many more books written, and still the real objective remains elusive. Even the best made plans of teaching the subject may result in stereotypes. The teacher may therefore regard his students in the same way that the artist or designer regards the object of his design. For example, if the artist works merely by principle or rule he may produce a faultless object, but at the same time one without spirit or character.

Each artist because he is different, endows his work with his personality and intelligence. This does not merely happen, it comes out of a long discipline by which the artist marries what he likes with what he learns. The teacher should strive to give that conception to the child and student when designing or creating. At the same time he must regard the child in a similar way, that is, he will try to bring consciousness of design to the child by a learning process which adjusts itself to the child's psychological and physiological structure.

Points in the New Concept of Design and Manual Arts

To a degree, we have expressed a new concept of design in which the following points stand out as important to its use and success.

Design and manual arts belong to the same experience. When they are artificially directed into separate experiences, they lose both their educational and art values.

The child should not be required to originate designs for crafts he has not experienced.

Form grows out of material. The materials condition the nature and quality of the design; therefore design and form should be developed through manipulation in the crafts.

Paper plans or designs belong to the skilled craftsman who can visualize materials and structure.

Design is the sensitiveness and use of aesthetic values of line, form, and color.

Poor taste is not an innate deficiency, but is the undeveloped consciousness and inept use of aesthetic values.

The artist may seek inspiration and suggestion from nature, but he must not imitate or copy it.

The young artist will find the pure geometric forms simple to conceive and manipulate as elements of design.

It will be advisable in teaching the concept of pure design values to work with abstract forms before using natural or real motifs.

The modern principle of form fitting function will help the young artist in conceiving design as related to structure and materials.

Decoration should be used discriminately and should help to emphasize form. Abstract ornament should precede the use of natural ornament. When natural motifs are used they should be simplified and fitted to form.

Surface decoration should be unobtrusive and subordinate to the form it embellishes. The merit of all-over pattern is its unity of surface and flatness of appearance.

Some students may seem to have a more ready response to design than others, but everyone can develop the use and appreciation of the aesthetic qualities that make up design.

Chapter Nine

The Child-Artist and His Materials

Creative Experience Requires Flexible Materials and Media

Creative experience requires flexible materials and media. These instruments are the practical means toward originative expression and should fit the child's fingers and obey his will. They must be as rich in possibilities as the child's imagination demands, so that their qualities of flexibility and plasticity will encourage and not inhibit expression. A child cannot respond freely and spontaneously to stubborn tools, nor can he broaden his vision or grow in power with a limited range of materials. The importance of this fact to good education has been overlooked even by many progressive teachers. Though they practise modern methods according to the newer philosophy, they still employ the limited materials of the academic school of art in the same formal ways.

For the most part, wax crayons, charcoal, water colors, poster paints, and oils comprise the media in use from kindergarten through college. To the average teacher a tool is merely a tool, but to the creative teacher it becomes a sensitive instrument through which the spirit flows out into art expression. It must, therefore, be carefully chosen to fit the special need and age of the child. Not any tool will do; it must be the right tool. The aim is to get a material that will bring the child closer to his work and one that will not seem awkward or act as a barrier to him; in short, to get the child's fingers into the materials and hence into expression. Materials and processes to meet the many unsatisfied needs of children have yet to be discovered. Ruth Faison Shaw demonstrated one possibility for research and discovery in this field when she introduced finger paints. Here is a medium that encourages the release of expression and really helps to stimulate the emotions of the beginner or young child.

It is also important to get the child to think in intimate terms about his tools and materials, to think of them as friendly and magic powers which can help him to do wonders in revealing his ideas. They are the sesame to the spirit and the fairy wand of the artist. The teacher should therefore offer the child a wide range of materials and tools so that he may find the one most suited to his ability and mood. When he finds such a medium or tool the teacher should help him to know and use it to the best advantage, both in satisfying the particular expression, and in developing the latent power within. The child should have as much freedom in choosing his tools and media as he has in choosing his subject matter. This method is the key to the whole problem; it gives the child the opportunity to react sensitively to his materials, to regard them as potential instruments of creative power.

Processes and Media Used by Old Masters Revived for Modern Use

Of course, if the teacher is to enrich the range of art experience for the child, he must first become acquainted with the wide variety of art materials, media, and techniques. The field of art media, techniques, and processes has been developed by the old and modern masters over centuries of progress and includes such processes as the fresco, encaustic, gouache, and tempera. These processes, though known to artists, were rarely used within the recent past, but they have been revived and introduced to the active field of art by the modern artists, particularly the Mexican masters after years of research and experimentation. Much credit must be given to Diego Rivera as a scholar as well as in his capacity as a master of the fine arts. These processes and materials were introduced in the program of art of the Mexican schools during the period of the Open Air Schools, and account in part for the consuming interest in art of Mexican children.

Tools, Media, and Processes to Meet the Need of Various Age Levels

To repeat, it is important that the tools, media, and processes suit the age level and particular ability of the child, and that no task be given to a child that is beyond his comprehension or ability. For example, it is often desirable to give very young children large brushes and large pieces of paper because they see and express themselves in bold, graphic language. Paint is a good medium because it is flowing, unresistant, and effective. Color is emotionally satisfying, especially water color or poster paints. Oils should seldom, if ever, be attempted at this stage. Clay, of course, is an excellent medium because it satisfies the urge to build, and will train little fingers to acquire power and control.

In contrast, the young adolescent (nine to twelve years of age) often demands resisting materials, as wood, stone, or metal, in addition to the media just mentioned, because they challenge his intelligence and consume his abundant energy. Such processes as tempera or gouache become especially engaging to him because they require thought and skill in preparation and in use. The older adolescent, the senior high school student, will find the more difficult processes, such as the encaustic and fresco, of even greater interest because he possesses the skill, concentration, and study that these processes require. His younger, and probably more impetuous adolescent brother, would not handle them successfully.

The knowledge of pigments and pigment making is an interesting and vital part of the youthful artist's work. They build necessary forms of discipline and skill without coercion because of their interesting processes. They give the youth a sense of mastery and thoroughness of his job. Probably the young apprentice of the medieval times was oriented to his art through gaining this knowledge, and it may also account for the high standard of his workmanship and production. Such training has been greatly neglected in contemporary education. As a rule, the child has no feeling about the medium with which he works. Too many prepared materials and commercial products have left him insensitive to the materials he uses, but some active experience in the preparation of his media may re-awaken his sensitiveness and interest. A few schools have developed a study of pigment making. At the Fieldston School in New York City, the student who has declared a major interest in art undertakes a study of pigment making and learns to prepare oils and tempera colors as part of his science course. The students of the elementary division in the State Teachers College in Madison, Wisconsin, make their own oil pigments.

On the college level the Tyler School of Fine Arts of Temple University in Elkins Park, Pennsylvania, teaches students to prepare grounds and pigments under the instruction of Alexander Abels, co-worker of Max Doerner, the authority on this subject.

The Art of Pigment Making

The making of paints is a simple and stimulating experience and can be easily managed by the average high school student, for it requires little skill and understanding. While the process must first be regarded as a valuable educational experience, it is also a great economy, especially where paints are used in quantity. Most paints are composed of dry powdered color and a binder. The binder differs with the medium. In selecting dry colors it is wise to purchase artist's colors, not decorator's colors. Even though artist's colors are more expensive, they are worth the investment as they give better results, while a small amount goes a long way.[1]

[1] Artist's dry colors may be purchased at any sizable artist's materials store. In New York City they may be purchased at Fezandie and Sperle; Blocks or Schmincke products are also good.

Decorator's dry colors may be used for pigments which are needed in quantity and do not require a good quality of color, such as for theater settings and all temporary work, but it is necessary to select artist's colors for fresco, encaustic, or oils. These colors are ground with their binder or medium on a marble slab with a marble muller. Small quantities of pigment may be ground in a mortar with a pestle. The marble muller and slab are ideal for the purpose and are the tools used in professional work, but they are not always obtainable. Equally good results may be obtained with a ground glass slab and a ground glass muller (Plate XCI). These tools may be easily made by the teacher or students in the following manner: A piece of plate glass is obtained for the slab and the muller is made with a glass coaster and a short stick. The stick is cemented to the coaster and may be shaped to fit the fingers. Sand is sprinkled on the glass and the muller is then rubbed over it in a circular motion until the surfaces of both the coaster and the slab are ground evenly.

Making Transparent Water Color Pigment.—Water color is powdered color ground with the following medium: one part gum tragacanth, one part gum arabic, and one-eighth part (of the sum of these two parts of gums) glycerine. The colors are ground with this medium and kept in small covered pans or tubes until there is occasion to use them. Each color should be ground separately. They are used like ordinary tube water colors.

Making Oil Paints.—The making of oil paints is a much simpler process than that of making water colors. The dry powdered colors are ground with linseed oil.[2] The oil is mixed with the color until a thick paste is formed (using a spatula or stick for mixing) and then this paste is ground on the marble slab with the grinder until it is as smooth as butter. Each color is mixed separately and put into covered jars (Plate XCI). These colors should be allowed to remain for a while, probably overnight. They will appear more fluid than when ground and will need to have more pigment added. This is due to the fact that it takes the linseed oil time to absorb the pigment. Ultramarine blue and oxide of chromium, also called "vert emeraude," in particular require added pigment in grinding. The color will keep indefinitely and may be used in the same way as the commercially made tube colors. They should be put into tubes and used like commercial colors[3] (Plate XCI).

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[2] Use raw unbleached cold pressed linseed oil.

New Media and Their Preparation

The various media described in the following paragraphs may be new to the teacher of art and to the average artist, but actually they are very old media, having been used by the ancient Egyptians and Greeks, and the Italians of the Renaissance. They have been revived by the Mexican painters and have been employed quite extensively in Mexican schools. Their introduction in modern painting gives a new impetus to art and adds richer fields of exploration and satisfaction to the creative experience. The processes differ only slightly from their original use, and the simpler methods have been chosen for discussion here so as not to confuse the youthful artist. The artist may, however, refer to other sources for fuller treatment of the subject.[4] Neither the art teacher nor the young artist will find these processes difficult to carry out in the average classroom.

Gouache and Tempera Media and Their Preparation.—Gouache is dry color mixed with white and has an opaque chalky quality. It is most similar to pastel, but is a painting medium like tempera. A

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[3] Tubes may be purchased at a paint house. The color is put into the open end of the tube with a palette knife and the end closed by folding it in a few times and fastened with a clip provided for the purpose.

[4] Max Doerner, *The Materials of the Artist* (New York: Harcourt, Brace and Company, 1934); A. P. Laurie, *The Painter's Methods and Materials* (Philadelphia: J. B. Lippincott Company, 1926); Ralph Mayer, *The Artist's Handbook* (New York: The Viking Press, 1940).

Plate XCI

Grinding Colors on Marble Slab

thin glue solution is used as a binder. It is prepared as follows: Gelatine glue is used, one part glue to twenty-five parts water. Powder colors are used and a little white mixed with each color to make it opaque. The pigment may be mixed with the binder and a soft brush on the palette, or a paste of each color may be made of one part gelatine to twenty parts water. Care must be taken not to apply too many layers of paint on the surface, or make the pigment too thick, as it will crack. Not more than three layers should be applied. Too much binder will also cause cracking, while too little will allow the pigment to dust off.

Tempera is an emulsion: a mixture of oil and water. There are two kinds of emulsions, natural and artificial. The artificial do not have the same good qualities as the natural emulsions. A natural emulsion is made with an emulsifier such as casein or egg.

Casein Tempera.—Dry colors ground with casein emulsion make casein tempera. The emulsion is made as follows: Powdered casein (alkali soluble, not water soluble) is purchased at a drug store or chemical house. Four or five tablespoons of casein are put in a large cup or bowl and tepid water slowly added, beating it constantly while adding occasional drops of ammonia. This will make a thick, gelatinous emulsion. Each color is ground with this emulsion. The pigment is painted on the surface with a brush and may be used either thin like water color or thick like oil color. Tempera can be used on any material, but wood or paper is preferable. A soft hair brush, such as that used for water color, is best adapted to these media of gouache and tempera.

Egg Tempera.—The use of egg as a medium is very old, but very permanent, and many examples may be found among the works of old masters, in a marvelous state of freshness and preservation. This medium gives a quality of richness and clarity unequaled by other processes. The yolk of egg acts as a binder for the color. The dry colors are first ground in water to form a paste and put into separate jars with enough water to cover them. The egg medium is now mixed. The yolk is separated from the white. The skin should be removed for best results by pinching the outer skin and allowing the yolk to run out on the marble or glass slab. One teaspoon of water to each egg is put into a container, the egg is added, and strained through muslin. Only one egg is used at a time as an egg goes a long way and the medium will last a long time if kept in a cool place. The egg medium and the pigment paste are put on the palette and mixed together with the brush as it is used. It is always necessary to have enough binder to make the pigment stick to the painting. The pigment is applied with a soft brush. It is important to get the proper mixture of egg and pigment, as some colors require more egg than others do. If, after drying, the color appears powdery, it indicates that not sufficient egg has been used. The young artist, however, will be able to determine these proportions after a little experience. A simple method used by some Mexican teachers may be used as a preliminary to the more thorough process of painting in egg tempera described above. A whole egg is mixed with water in a small container, the dry colors are laid on the palette or painting table in little heaps. The artist then paints by dipping into the medium first, then into the dry color, mixing it on the palette and applying it directly to the painting. This is a spontaneous if not a thorough method. It may well serve as a good experience for the student in learning the behavior of tempera before he undertakes its more serious problems. Egg tempera may be used on any surface, but paper or wood panel, prepared with gesso, is the most satisfactory.

Fresco and Encaustic Media.—The processes and media of fresco and encaustic are discussed in Chapter Three, "The Child as Mural Painter," but they should be mentioned here so as to be included under new methods and materials. They should be regarded as the crowning achievement and final aim of the painter's experience, since they require the greatest power and skill in using the methods described. None of these methods, however, is beyond the abilities of the high school student, nor too difficult or impossible to carry on with selected groups in the average school. The materials are inexpensive and the equipment is simple and can be acquired and managed by any enterprising teacher.

> *The child is the potential creator. He is a free natural being. His creativeness is born of real enthusiasm and joy of expression. He has no competition to fight, no market to please, no price to set. He belongs to no cult and knows no "isms." He expends his energy on drawing and painting as he does in play. Art with him is a form of play, the spirit and imagination at play, revealing the true, innocent, child-like self.*

Such is the vision of this volume. The methods, materials, and media suggested have been selected to make this ideal a reality. The author's aim has been to build a practical philosophy which might help the teacher to see how creative teaching operates under varying conditions, and at different age levels. He hopes that the reader may be stimulated to carry on and to establish creative art in American education, so that youthful artists everywhere may come to the full realization of their native powers.

Index

Abels, Alexander, 236
Abrasives, 176-77
Abstract artist, child as, 23
Abstract forms, 223-26, figs. 166-93
Abstraction, 29
Accent, 41
Adolescence; *see also* Secondary age level
  barren period at, 4
  characteristics of art work during, 3, 17
  diminution of creative growth at, 4
  diminution of design sense at, 211-14
  and graphic arts, 151
  tools, media, and processes during, 235
Adult ideas and children, 56
Aesthetic judgment, 221-22
African Negro sculpture, 116
  as aid in developing techniques, 21
Age level; *see also* Elementary age level, Pre-school age level, Primary age level, Secondary age level
  media to suit, 235
  processes to suit, 235
  tools to suit, 235
Agricultural School, Chapingo, Mexico, 69
Aim of art education, 3, 25
Aluminum plates, 176, 178
American Indian pottery, 119, 148
American Radiator Building, 59
American schools and colleges, 204
Amero, Emilio, 69
Analysis
  of da Vinci's *Last Supper*, 42
  of works of other masters, 34
Angular line composition, 38-39, figs. 9-12
Applied design, 213-14
Appreciation through graphic arts, 151
Aquatint plates, 164
Aquatint process, 163-67, pl. LXIV, figs. 126-33
Architectonic elements in mural design, 70
Architecture, Egyptian and Greek, 38
Arenal, Luis, 69
Arkansas knife stone, 104
Arkansas round edge slipstone, 104
Armatures, 97-98, pls. XXXII-XXXIV, figs. 32-34
Art development of child, 22-25
Art education, aim of, 3, 25
Art work
  children's, characteristics of, 3, 17, 18
  importance of, 3
Asphaltum, 165
Assimilative process in group mural, 57
Assyrian carving, 106
Assyrian sculpture, 90
Aztec pottery, 119
Aztec sculpture and development of techniques, 21

Backgrounds and relation to objects, 33
Bacon, Peggy, 9
Balance, 30-31
Bas-relief, 100; *see also* Carving, relief
Basic materials, pl. LXXVII
Bauhaus, 204-6
Beauty, 216
Behavior development, 22-25
Bellevue Hospital, 69
Benches for wood carving, 105
Biddle, George, 69
Bingler Co., 103
Biscuit fire, 139
Black and white values in painting, 48
Blankets for etching press, pl. LXI
Blocking out forms
  at primary level, 85-86
  in the round, fig. 49
Blow torch, 82, fig. 31
Braque, Georges, 185
Bright glazes, 143
Bristle brushes, 65, 68
Brooklyn Bridge, 8
Brush work
  Chinese, 21
  Japanese, 21, 38
Brushes
  bristle, 65, 68
  choice of, 28
  fresco buono, 74
Building of constructions, 193-200
Burnisher, 169, figs. 134, 136
Burnishing wood, 108
Burnt encaustic, 81-82
Burr, 162, 163

- Calder, Alexander, 185-86
- Cambodian carving, 106
- Canvas, 67-68
  - burnt encaustic on, 82
- Carborundum stone, 115
  - for wood-carving tools, 104
- Cartoons, mural, 71-72
- Carving, 103-15, pls. XXVI, XXVIII, fig. 48; *see also* Sculpture, Modeling
  - Assyrian, 106
  - bas-relief, 100
  - Cambodian, 106
  - clay, 91
  - plaster, 103
  - relief, 105-8, pl. XXXVI, figs. 35, 37-43; *see also* Carving, bas-relief
  - in the round, 108-14, pls. XXX, XXXVII, figs. 44-46, 50-52
  - stone, 111-15, pls. XXXIX, XL, figs. 53-61
  - value of, 95
  - wood, 103-7, pls. XXVII, XXXV, XXXVII, XXXVIII
- Casein, 80
- Casein tempera, formula for, 239
- Cast plaster, 103
- Center of interest, 41
- Centering clay on wheel, 136, figs. 94-95
- Central Park, 7
- Ceramic materials, sources of, 148
- Ceramics, 141; *see also* Pottery, Glazes, Glazing
- Cézanne, Paul, 34, 174
- Chalk, 67
- Chalk mural, 67
- Chanin Building, 7, 57
- Character studies as subject matter, 43
- Characteristics of children's art work, 3, 17, 18
- Charcoal, 68, 167
- Charlot, Jean, 69
- Child
  - art development of, 22-25
  - behavior development of, 22-25
- Child and artist, 1
- Child-teacher relationship, 16-17
- Child 3-4 years old, 189-90, 197, pl. LXXIV
- Children's Holiday Carnival of Modern Art, 184, 195, pl. LXVIII
- China, 142
- Chinese brush work, 21
- Chisels, wood carving, 103-4, pl. XXXVII
- Chrysler Building, 7, 59
- Circus, 12
- City, 5-8, pl. IV
- Civic Center, Mexico City, 69
- Cizek, Professor, 9
- Clay
  - carving, 91
  - cohesive, 87
  - as medium, 117
  - pottery, 128, 136-37, figs. 65-67, 94-96, pl. XLII
  - self-hardening, 87
  - varieties of, 87
- Cleaning
  - of aquatint plate, 166
  - of drypoint plate, 162
  - of plate for hard ground etching, 156, fig. 107
  - of lithographic stone, 180
- Clichés, 200
- Coil method; *see* Pottery construction, coil method of
- Cold encaustic, 81-82
- Collage, 187-92, figs. 154, 155
- Collage and construction, 185, 187
- Collage box, 189
- Collage table, 189
- Collective mural, 62
- Color, 44-48
  - beginning consciousness of, 29
  - decorator, 237
  - dry, sources for, 236
  - emotional experience of, 44
  - form and, 33, pl. XVII
  - fresco buono, 73-75
  - in murals, 64
  - naturalistic, 47
  - psychology of, 47
  - realistic *vs.* emotional, 47
  - response to, 46
  - science of, 47
  - sensitiveness to, 44
  - teaching, 45
  - and young children, 44
- Color harmonies, 46
- Color palette, 45
  - for encaustic, 82
  - for fresco buono, 74
  - individual, 48
- Color scales, 46
- Color sketches for mural, 70
- Color theory, teaching, 46
- Color wheels, 46, 163
- Communication, art as, 23
- Community as subject matter, 43
- Competitive process for group mural, 61

Composition, 32, pls. V, VI
  accent, in, 41
  analysis of, in *Last Supper*, 42
  angular-line, 38-39, figs. 9-12
  beginning, 8
  conscious, 35-36
  curved-line, 39, figs. 13-17, pl. XIX
  horizontal-line, figs. 6-8
  horizontal-and-vertical-line, 37-38, pl. XVIII, figs. 1-8
  intuitive, 35
  painting, 35
  sense of, pls. XV, XVI
  values in, 32
  variety in, 41
Concentration 24
Cones, pyrometric, 139, 145-46, figs. 120
Construction
  definition of, 187
  making a, 196-98
  as medium, 193
  simple method of, 196-97, figs. 156, 163
  mobile, pl. LXXVIII, figs. 161-63
  stabile, 196-97, pl. LXX, figs. 156-59
  by young child, 195
Contours, line, 32
Conventionalized motifs, 213
Copper plates
  in aquatint, 164
  in drypoint, 162
  in hard ground etching, 157
  in mezzotint, 167
Coptic painting, 81
Copying, 55
Crafts, design related to, 216
Craftsmanship, 197, 200
Crawling, 146
Creative activity and design sensitivity, 15-16
Creative development
  and graphic arts, 151
  in senior high school, 24
Creative experience, 3
  materials for, 233-34
Creative expression
  and graphic arts, 153
  painting as, 28
Creative growth, diminution of, at adolescence, 4
Creative impulse stimulated by teacher, 96
Creative insight and interests of children, 193
Creative teaching
  of design, 33
  of design elements, 30
Cretan sculpture, 116
Cuernavaca, 40, 69
Current events, 53
Curved-line compositions, 39, pl. XIX, figs. 13-17
Cut- and folded-paper designs, 4

Dabber, homemade, 157
Dark and light
  in composition, 32, pl. XVI
  through linoleum printing, 153
Dark and light values, sense of, 31
Dartmouth College, 69, 76
Daubing, 29
Daumier, Honoré, 22
da Vinci, 42, 77
Decoration
  concept of, 229
  pottery, 147-49
  to emphasize form, 229
Decorator colors, 237
Demonstrations by teacher, 16
Department of Justice Building, 69
Design, 226
  abstract form in, 223-26, figs. 166-93
  at adolescence, 211-14
  aesthetic judgment in, 221-22
  applied, 213-14
  for carving in the round, 110, 111, figs. 48, 53, 54
  concept of, 218-20
  concept of child, 197
  consciousness of, 15, 30, 231
  courses in, 204
  in craft shops, 213-14, pl. LXXXVI
  and crafts, 216
  creative teaching of, 33
  development of, by free expression, 15-16
  at elementary level, 215
  elements of, creative teaching of, 30
  form in, 228, figs. 164, 165
  fresco buono, Mexican method of, 72, 73
  function in, 228, figs. 190, 191
  furniture, pls. LXXXVIII-XC
  geometric form in, 223-26, figs. 166-93
  at high school level, pl. LXXXV
  industrial arts, 213-14, 216
  inhibition of, by teaching practices, 213
  jewelry, 225-26, figs. 174-83
  at junior high school level, 215
  low-relief, 101
  and materials, 217
  mathematical judgment in, 218-21
  metalwork, 225, pl. LXXXVII, figs. 171-73
  mezzotint, 169
  and modeling at primary level, 84
  mural, 59, 68, 70

Design (*Continued*)
  new concept of teaching, 216-17
  order of learning, 215
  paper used as part of, 67
  pottery, 122-25, 131-32, figs. 88, 89
  at primary age level, 215
  pure, 186
  in relief carving, 105-6, figs. 35, 36
  repeat, pl. LXXXIV
  sculpture, 90, 99-100
  teaching, 215-16
    new concept of, 230-32
    in pottery, 122-23
  textiles, pl. LXXXIV
Design media suited to child's nature, 187
Designer, young child as, 211
Detail, interest in, 30
Detroit Museum of Art, 69
Dipping glaze, 144, pl. LIII, fig. 102
Distortion, exaggeration and, 206
Doerner, Max, 236
Draftsmanship, 23
  interest in, 17-18
  and Italian children, 8
Drakenfeld, B. F., and Co., 148
Drawing, pls. IX-XI, XV
  design, for carving, 110, figs. 48, 53-54
  on drypoint plate, 162, pl. LXIII
  on etching plates, 158, 161
  life-model, pl. LVII
  lithographic, 175, 177-78, pl. LXVI
  Mexican method of teaching, 20, 35
  mezzotint, 169
Drawing books, 22
Drills for stone carving, 111
Dry colors, sources for, 236
Dry fresco, 79; *see also* Fresco secco
Drying cabinet for pottery, 138-39
Drypoint, 162-63, pl. LXIII
Dürer, Albrecht, 22
Dynamic symmetry, 40

Earthenware, 142
Educational value of graphic arts, 153
Egg medium, 80
Egg tempera, 239-40
Egyptian architecture, 38
Egyptian carving, 106
Egyptian pottery, 119, 148
Egyptian sculpture, 116
Egyptian wall painting, 64
El Greco, 38
Elementary age level
  art as communication at, 23
  design at, 215
Elementary age level (*Continued*)
  and development of child as painter, 30-32
  and graphic arts, 152
  and linoleum printing, 153
  oil paint as medium at, 31
  paintings at, pls. II, XIV
  pottery characteristics at, 119, 133
  and sculpture, 89-91
  tempera as medium for, 31
  water color as medium for, 31
  and woodblock printing, 153
Emotional experience of color, 44
Emotional *vs.* realistic color, 47
Emphasis, 41
Empire State Building, 7, 57
Encaustic, 81-82, fig. 31
Environment as a source of inspiration, 5, pls. V, VI
Etching, 154-61, pl. LIX, figs. 115-16
  of aquatint plate, 165
  characteristics of, 163
  hard ground, 156-60, pls. LVIII, LIX-LXI, figs. 106-22
  ink for, 159
  of lithographic stone, 178, fig. 151
  line quality in, 163
  paper for preparation of, 160
  and self-evaluation, 155
  soft ground, 160-61, figs. 123-25
  teaching line through, 154-56
Etching bath, 158
Etching blankets, pl. LXI
Etching needle, 158, fig. 114
Etching plate
  preservation of, 160
  printing from, 160, pls. LXI, LXII, fig. 121
  wiping, 159, pls. LIX, LX, figs. 119-20
Etching press, 160, pl. LXII, fig. 121
Ettl Studios, Inc., 111
Evaluation; *see* Self-evaluation
Exaggeration and distortion, 206
Experimentation, 22
Experiments in texture, 189-90
Exploratory years, 24
Expression, free
  and development of design, 15-16
  techniques as a means of, 20

Faïence, 143
Family activities as source of inspiration, 9-11
Fanning lithographic stone, fig. 152
Fezandie and Sperle, 236
Fieldston School, 53, 236

Figure
  drawing the, 23, pls. X, XI
  interest in, 32
  in mural painting, 64
Finger paints, 234
Finished product, 197
Finishing
  of hand-built pottery, pl. XLI
  of marble, 115
  of wood carving surface, fig. 47
  of thrown pottery on wheel, 137
  of wood carving, pl. XXXVIII
  of wood with wax, 108
Firing
  of glazed pottery, 145
  of pottery, 139
  preserving modeling without, 86-87
Fixative, applying, 67
Flannagan, John B., 21, 99
Flat chisels, 111
Flat-sided pottery construction, 132-33
Flint powder, 177
Flores, A. Sanches, 78
Focus of interest, 41
Folded- and cut-paper designs, 4
Foods, Story of, as mural theme, 54
Foot, tooling of, in thrown pottery, 138, fig. 100
Foreshortening in murals, 63
Form, 217; *see also* Design
  through color and value, 33, pl. XVII
  in design, 228
  emphasis of, by decoration, 229, figs. 194-99
  experience of, through sculpture, 83, 96, 116
  through line and value in lithography, 170
  through line contours and perspective, 32
  in murals, 64
  models for visualizing, figs. 184-89
  suggestion of, by perspective, 31
  teaching, without line through mezzotint, 167
  visualizing, through models, 226-27
Formula
  for aquatint ground, 164
  for casein tempera, 239
  for egg tempera, 239-40
  for encaustic, 81-82
  for etching bath, 158
  for etching plates, 119
  for gouache, 238-39
  for hard ground etching, 157
  for lithographic etching, 178
  for oil paints, 237-38
Formula (*Continued*)
  for soft ground etching, 161
  for transparent water color, 237
  for underglaze color medium, 148
  for underglaze colored slip, 148
Formulas
  and art values, 15
  and atrophy of imagination, 15
  imposed, 213
Foundation course, 206
Free expression; *see* Expression, free
Freigang, Paul, Pottery Studio, 135
Fresco, 240
  dry, 79; *see also* Fresco buono
  panels in, 78-79
Fresco buono, 69-79
  color palette, 74
  colors needed for class in, 74
  corrections in, 76-77
  importance of preliminary sketches in, 77
  matching colors in, 75
  Mexican method of, 75
  opaque method, 76
  principle of, 69
  procedures in, 70-77
  sand for, 72
  tools for applying, 72, fig. 20
  transparent method of, 76
Fresco painting in U. S. and Mexico, 69
Fresco secco, 69-81; *see also* Mural
  as media, 80
  on old wall, 79-80
  on plaster wall, 79-80
  panels in, 80-81, fig. 28
Frit furnace, 144
Frits, sources of, 144
Fritted glazes, 143-44
Function in design, 228, figs. 190-91
Function of materials, 207
Furniture design, pls. LXXXVIII-XC

Games
  Historic and Modern, as theme for mural, 54, pl. XXI
  History of, as theme for mural, 54
Gansevoort Market, 7
Garnet, powdered, 176
Gauguin, Paul, 38
Geometric form
  in design, 223-26, figs. 166-93
  in pottery design, 131-32, figs. 88-89
George Washington Bridge, 8
Georgia marble, 114
Gifts as incentive for child, 13
Glaze fire, stacking kiln for, 145
Glazes; *see also* Glazing, Ceramics
  bright, 143

Glazes (*Continued*)
  classifications of, 143
  definition of, 142
  dipping, 144, pl. LIII, fig. 102
  fritted, 143-44
  grinding, pl. LI
  intermediate or semi-mat, 143
  mat, 143
  mixing, pl. L
  painting, 144, pl. LII, fig. 101
  pouring, 144, pls. LIV, LV, fig. 103
  preparation of, 141
  raw, 143
  spraying, 145, fig. 104
Glazing, 140-45; *see also* Glazes, Ceramics
Gogh, Vincent van, 22, 34, 174
Gouache, 237-38
Gouges
  relief carving, figs. 38-41
  wood, 103-4
Government Building, Guadalahara, Mexico, 69
Grain in wood carving, 107
Graining
  of lithographic stone, 176, figs. 148-49
  of mezzotint plate, 169
Graphic arts, 151-83; *see also* Etching, Drypoint, Aquatint, Mezzotint, Lithography
  and adolescents, 151, 152
  appreciation through, 151
  and creative development, 151
  educational values of, 153
Greek architecture, 38
Greek pottery, 148, 149
Green ware, 138, pl. XLIX
Greenwood, Marion, 69
Grinding glaze, pl. LI
Grinding oil colors, pl. XCI
Gropius, Walter, 204
Ground, aquatint, 164
Ground etching, removing, 159
Ground etching formula
  hard, 157
  soft, 161
Grounding
  of aquatint plate, 164-65, figs. 126-27
  of hard ground plate, 157, figs. 109-12
  of soft ground plate, fig. 123
Group, activity, 13
  leader of, for murals, 59, 62
  mural by, pl. XXIV
Group pattern, 35
Group teaching, 19
  and mural painting, 52
  and painting, 34
Guidance by teacher, 16-17
Gum arabic, 178
Gumming the lithographic stone, 179
Gypsum plaster, 79

Hammacher, Schlemmer and Co., 103
Hammer for stone carving, 111
Hand-built pottery, finishing, pl. XLI
Hand wipe, 159, 163, 166, pl. LIX
Hard ground etching, 156-60
Harmony of the whole, 41
Harshaw, Cleveland, Ohio, 144
High-fire series of pyrometric cones, 146
High relief, 100; *see also* Carving, relief
High school age level; *see* Secondary age level
Historical subjects in murals, 53, 55
History as a source of inspiration, 13
Holbein, Hans, 22
Holiday gifts, 13
Holidays, 12
Hollowing clay on wheel, 136-37, fig. 96
Home
  self and, as sources of inspiration, 9
  as mural theme, 54
  as subject matter, 43
Homemade tools and materials
  dabber, 157
  etching needle, 158
  inker, 159
  muller, 237
  stopping-out varnish, 158
Honing stone, 115
Horizontal-line compositions, figs. 6-8
Horizontal-and-vertical-line compositions, 37-38, pl. XVIII, figs. 1-8

Imagery, training to build, 8
Imagination and formulas, 15
Imitation, 198, 213
  vs. originality and invention, 15
Imitative use of line, 154
Incentive, gifts as, 13
Incised decoration in pottery, 147
Indian pottery, 119, 148
Indiana limestone, 111
Individual differences, 24
Individual teaching, 18-20
  of color, 45
  of painting, 34
Individualism, 22
Industrial arts design, 216
  courses in, 213-14

Ink
  etching, 158
  lithographic, 176, 180
Inker, homemade, 159
Inking
  of hard ground etching plate, pl. LX, figs. 117-18
  of lithographic stone, 179-80, fig. 153
  roller for, 179-80
Inking slab, 179
Inspiration, source of
  circus as, 12
  city as, 5-8
  environment as, 5
  exciting events as, 12
  family activities as, 9-11
  history as, 13
  holidays as, 12
  home and self as, 9
  poetry as, 14
  seasonal events as, 12
  stories as, 14
  unseen world as, 13
Institute of Design, 204
Integration with other studies, 13
Interior decoration, pl. LXXXVIII
Intermediate glazes, 143
Intimate subjects, 11
Invention
  and craftsmanship, 200
  originality and, *vs.* imitation, 15
  to supplement observation, 8
Inwood Pottery Studios, 148
Italian children, draftsmanship common to, 8
Italian method of opaque fresco buono, 76
Italian pottery, 149

Japanese brush work, 38
  as aid in developing techniques, 21
Japanese prints, 38
Jewelry, design for, 225-26, figs. 174-83
Judgment in design
  aesthetic, 221-22
  mathematical, 218-21
Junior high school age level; *see* Secondary age level, junior high school

Kalsomine colors, 68
Kelheim stone, 176
Kick wheel, 133, 135, pl. XLVII
Kilns, 139
  stacking, 139, 145
  test loading, pl. L
Kinaesthetic experience in mezzotint, 170
Kindergarten age level; *see* Pre-school age level
Klee, Paul, 1
Knife stone, Arkansas, 104

Large-scale work, 31-32
  encouragement of, by mural painting, 51
Last Supper, analysis of, 42
Laying in mural design, 68
Lettering pens, forms conventionalized with, 4
Life drawing from model, pl. LVII
Life model, 32, pls. XV, XVI
Life as source for developing techniques, 20
Light and dark through linoleum printing, 153
Lime
  as medium for fresco secco, 80
  slaking, 71-72
  white, 76
Lime wash, 80
Limestone, 111
Line
  and drypoint, 162
  emphasis on, in murals, 64
  and etching, 154-56
  imitative use of, 154
  and linoleum printing, 153
  significant use of, 154, pl. LVI
Line contours, sense of form revealed through, 32
Line quality
  in drypoint, 163
  in etching, 161, 163
  with lithographic sticks, pl. LXVI, figs. 137-47
Lines and masses, proportion in, 40-41
Linoleum printing, 153
Lithographic process, 175-83, figs. 148-53
  cleaning the stone, 180
  drawing, 175
  drawing on the stone, 177, fig. 150
  etching the stone, 178, fig. 151
  graining the stone, 176, figs. 148-49
  gumming the stone, 179
  inking the stone, 179-80, fig. 153
  preparing etches, 179, 180
  printing, 181
  printing from metal plates, 182
  re-etching the stone, 180
  setting the stone in the press, 181
  tracing the drawing on the stone, 177
  transferring the drawing, 175
Lithographic drawings, pl. LXVI
Lithographic ink, 176, 180
Lithographic pencils, 171-75

INSTITUTE OF EDUCATION FOR WOMEN
Dept. of Extension SERVICE.
★ CALCUTTA-27 ★

Lithographic press, 181, pl. LXVII
Lithographic sticks, 171-75, pl. LXVI, figs. 137-47
  drawing on the stone with, 177
  modeling with, 174, figs. 144-47
Lithographic stone, 176
Lithography
  aluminum and zinc plates for, 176
  papers for, 181
  preservation of stone in, 182
  principles of, 183
  and the senior high school level, 171
  teaching form in line and value through, 170
  wash effects with, 178
Loading the test kiln, 140
Lobster Trap and Fish Tail, 185, pl. LXIX
Location, murals in relation to, 64
Looking walks, 8
Low-fire series of pyrometric cones, 146
Low relief, 100; *see also* Carving, relief
Ludens, Ryah, 69

Madison (Wisconsin) State Teachers College, 236
Majolica, 143
Maldarelli, Oronzio, 99
Mallet, wood carver's, 104
Man, Evolution of, as mural theme, 54
Manipulation, desire for, 24
Marble, 111
  carving, 114
  Georgia, 114
  polishing, 115
  Tennessee, 114
  Vermont, 111, 114
Marin, John, 39
Mass
  emphasis on, in murals, 64
  experience with, through sculpture, 83, 116
Masses and lines, proportion in, 40-41
Mat glazes, 143
Matching colors in fresco buono, 75
Materials
  armature, 97-98, pl. XXXIII
  for canvas mural, 67-68
  ceramic, sources of, 148
  for chalk mural, 67
  and creative experience, 233-34
  and design, 217
  fresco buono, for a class, 74
  natural and manufactured, 188
  natural, for carving, 108, pl. XXX, figs. 44-45
  nature of, 190
Materials (*Continued*)
  new, 193
  painting; *see* Painting media
  for paper mural, 65-67
  psychological and aesthetic importance of, 203
  sources of, 207, 208
  for stone carving, 111
  variety in, 204
  for wood carving, 103
Mathematical judgment in design, 218-21
Mayan carving, 106
Mayan sculpture, 116
Measuring clay for potter's wheel, 136
Media; *see also* Materials, Painting media
  revival of older, 235
  to suit age level, 235
Medieval sculpture as aid in developing techniques, 21
Memory, 12; *see also* Visual memory
Meredith, Burgess, 186
Metalwork, design for, 225
Method, Cizek, 9
Methods
  conventional, 4
  of approach, and age level, 26
  of teaching, poor, 15
Methods books, 4
Mexican method
  of egg tempera, 240
  of drawing, teaching, 20, 35
  of fresco buono, 72, 75, 76
Mexican mural painters, 68
Mexican weaving, 217
Mexico, Open Air Schools of, 235
Mezzotint, kinaesthetic experience with, 170
Mezzotint plates, copper and zinc, 167
Mezzotint process, 167-70, pl. LXV
  drawing design for, 169
  graining plates for, 169
  for teaching form without line, 167
Michelangelo, 99
Ministry of Education, Mexico City, 69
Mobiles
  advanced projects in, 198
  affecting motion of, 200
  built on base, 198
Model, preserving, without firing, 86-87
Model, life, 32, pls. XV, XVI
Model for carving, plasteline, 106
Modeling; *see also* Sculpture
  definition of, 83
  and murals, 63
  at primary level, 84-86

Modeling (*Continued*)
  and self-evaluation, 86
  subject matter of, at primary level, 84-86
  and teaching of design at primary level, 84
  values of, 95
  with lithographic sticks, 174
Modeling wax, 87
Models
  dependence on, 34
  paper, 226-27
  plasteline, 226-27
  scale, of location of mural, 70
  students as, pl. XXI
  visualizing form through, 226-27, figs. 84-89
Moholy-Nagy, Laszlo, 204
Motivation and guidance, 190
Muffle, 139
Muller, homemade, 237
Mural
  aesthetic values of, 51
  black and white sketches for, 70
  canvas, 67-68
  chalk, 67
  children's, temporary nature of, 67
  choice of design for, 70
  collective, 62
  color of, and relation to location, 65
  color sketches for, 170
  concept of, 76
  cartoons for, 71-72
  design of, scale in, 59
  and mature students, 64
  encaustic, 81
  fresco, revival of, 68; *see also* Fresco buono, Fresco secco
  group, 57-62
  individual, value of, 55
  paper, 65, 67
  preliminary scale sketches of, 70
  as propaganda, 56
  processes in, 65-69
  quality in, 63
  relation of, to location, 64
  research for, 55
  scale in design of, 59
  scale model of location for, 70
  social values of, 51-52
  subject matter of, 53
  true, 69; *see also* Fresco buono
  of Washington Square, 6, pl. XXIV
Muralists, Mexican, 68
Murals by students, 54, 55, 57, pl. XX-XXIII
Murals in New Workers' School, 78
Muresco colors, 68
Museum of Modern Art, 195
Museum of Modern Art classes, 196
Museum of Morelia, Michoacan, Mexico, 69

National Preparatory School, Mexico City, 69
Natural materials
  carving, pl. XXX
  in the round, 108, figs. 44-45
Natural objects as source for developing techniques, 20
Naturalism, 222
Naturalistic color, 47
Nature, forms of, in design, 222-23, figs. 164-65
Needle
  drypoint, 162, pl. LXIII
  etching, 158, fig. 114
Negro sculpture, African; *see* African Negro Sculpture
Neutra, Richard, 38
New School for Social Research, 69
New Workers' School, 78
New York harbor, 8
Nitric acid, 178
Nursery school; *see* Age level, pre-school

Observation, direct, 12
O'Higgins, Paul, 69
Oil colors
  artists', 68
  decorators', 68
  grinding, pl. XCI
Oil paints, 28, 68
  formula for, 237-38
  as medium for ages nine and ten, 31
  and younger children, 29
Opaque method in fresco buono, 76
Open Air Schools of Mexico, 235
Originality, 8
  invention and, *vs.* imitation, 15
Orozco, José Clemente, 21, 68, 69
Outlining forms in relief carving, pl. XXXVI
Oven, pottery; *see* Kiln

Painted decoration on pottery, 148
Painter, development of child as, 28-33
Painting, pls. II, III, V-VIII, XII-XIV, XVI, XVIII, XIX
  appeal of, at all ages, 27
  of aquatint plate, fig. 128
  black and white values in, 48
  composition in, 35
  Coptic, 81
  Egyptian, 64

Painting (*Continued*)
  encaustic, 81-82
  fresco, 69
  fresco buono, 75; *see also* Fresco buono
  glaze, 144, pl. LII, fig. 101
  as medium for children, 27
  and spontaneity, 27
  subject matter in, 28, 36-37

Painting media
  oil paints as, 28
  poster paint as, for young children, 29
  transparent water color as, 29
  water color as, 28-29

Palette
  color, 45
  encaustic, 82
  fresco buono, 74
  individual, 48

Panels
  fresco, 78-79
  fresco secco, 80-81

Paper
  etching, preparation of, 160
  in lithography, 181
  models of, 226-27
  as part of design, 67

Paper mural, 65, 67, fig. 18

Pastel, 67

Pattern, 31
  group, 35

Pattern period, 29

Pattern quality, 191

People's Art Center, 193

Personal interpretation of subject, 8, 12

Perspective
  form suggested by, 31-32, pl. XV
  lack of, in mural, 63

Photographic representation, 9

Photographs, 21

Picasso, Pablo, 22

Piercing method in pottery, 132-33

Pigment making, 235-38

Plasteline, 87

Plasteline models, 226-27
  for carving, 106, 109

Plaster, cast
  for carving, 103
  for fresco buono, 71-73

Plaster wall, fresco secco on, 79-80

Plastic expression, 117
  through pottery, 118
  through sculpture, 84

Plates
  aquatint, 164

Plates (*Continued*)
  drypoint, 162
  etching, 159
  hard ground etching, 156
  lithographic, 176
  mezzotint, 167
  soft ground etching, 161

Point chisel, 111, pl. XL

Polishing marble, 115

Pomona College, 69

Poor, Henry Varnum, 69

Porcelain, 142

Portraits as subject matter, 43

Poster paints, 29, 67

Poster work, 203

Potter's wheel, 133, pl. XLVII

Pottery; *see also* Ceramics, Glazes, Glazing
  American Indian, 119, 148
  Aztec, 119
  characteristics of, 118-21
  construction of; *see* Pottery construction
  covering, with damp cloth, fig. 74
  damp box for, 129
  decoration of, 147-49
  design of, 122-25, 131-32, figs. 88-89
  and development of plastic expression, 118
  drying, 138-39
  Egyptian, 119, 148
  finishing edge of, pl. XLV
  finishing surface of, pl. XLVI
  firing, 139, 142, 145
  Greek, 148, 149
  green-ware, pl. XLIX
  hand-built, finishing, pl. XLI
  at high school level, pl. XLIX
  Italian, 149
  as a medium, 121
  Roman, 148

Pottery construction
  coil method of, 127-30, pls. XLIII, XLIV, figs. 69-73, 75-76
  flat-sided, 132-33, figs. 90-92
  piercing method of, 132-33
  primitive method of, 126-27, figs. 62-64
  sticking method of, 132-33
  strip method of, 130-31, figs. 78-87
  teaching, 126
  thrown method of, 133-38, pls. XLVII, XLVIII, figs. 94-100

Pottery gifts as a source of inspiration, 13

Pouncing design for fresco buono, 72

Pouring glaze, 144, pls. LIV, LV, fig. 103

Powdered garnet, 176

Pre-school age level
  art development at, 22

Pre-school age level (*Continued*)
  characteristics of art work at, 5
  child as designer at, 213
  and color, 44
  developing plastic expression, 117
  and development of child as painter, 28-29
  and murals, 64
  and primitive method of pottery construction, 126
  teaching tactics at, 29

Prehistoric art as aid in developing techniques, 21

Preliminary course (*Vorlehre*), 204

Preliminary sketches, importance of, in fresco buono, 77

Preservation
  of etching plates, 160
  of lithographic stone, 182
  of models without firing, 86-87

Press
  etching, 160, pl. LXII, fig. 121
  lithographic, 181, pl. LXVII

Primary age level
  art as communication at, 23
  design at, 215
  and development of child as painter, 30
  and glazing, 140
  and modeling, 84-86
  and pottery, 118-19, 127
  and child as symbolist, 23

Primary coat for water paints, 68

Primitive method of pottery construction, 126-27, figs. 62-64

Process
  aquatint, 163-67, pl. LXIV, figs. 126-33
  drypoint, 162-63
  hard ground etching, 156-60, pls. LVIII-LXI, figs. 106-22
  fresco buono, 70-77
  lithography, 175-83, figs. 148-53
  mezzotint, 167-70, pl. LXV
  mural, 65-69
  pottery-construction, pl. XLVIII, figs. 78-83, 87, 94-100
  soft ground etching, 160-61, figs. 123-25
  relief carving, 106-8, figs. 58-61

Processes to suit age level, 235

Professional results and high-school student, 152

Professional standards
  child and, 1
  misuses of, 14

Propaganda
  disguised as social consciousness, 57
  mural as, 56

Proportion in lines and masses, 40-41

Pseudo-Bauhaus, 206

Psychological and aesthetic importance of materials, 203

Putty powder, 115

Pyrometric cones, 139, 145-46, fig. 105

Rag wipe, 159, 162, pl. LX, fig. 120

Rasps
  stone, 108, 111
  wood, fig. 65

Raw glaze, 145

Realism, 21, 222
  interest in, 17-18
  and mural, 63
  and sculpture, 96

Red Hook Houses, Community Building, 69

Re-etching the lithographic stone, 180

Related studies, subject matter from, 52

Relief carving, 106-8
  in pottery decoration, 147
  in sculpture, 100

Rembrandt, 40

Repeat designs, pl. LXXXIV

Representation, 154
  beginning of, 29, pl. XIV
  photographic, 9

Research for mural, 55

Resin dust, 164

Results as an end, 152

Revival
  of fresco mural, 63
  of older media, 235

Rivera, Diego, 22, 40, 48, 69, 78, 234
  color palette of, for fresco buono, 74
  encaustic murals by, 81

Robbia, Della, 101

Rocker, 167

Rodriguez, Mercado, 69

Roller for inking lithographic stone, 179-80, fig. 153

Roman pottery, 148

Roulette, 72

Rules and formulas, 15

Rutherford Lithographic Press, pl. LXVII

Rutile, 145

Sagawash, 145

Sand for fresco buono, 72

Scale
  large, 31-32
  of mural design, 59
  small, 32

Scale model of mural location, 70

Scale modeling at primary level, 86

Schmincke products, 236
Schema, 2
Scraper, 169, fig. 134
Scratch coat, 71-72
Sculpture, 83-116; *see also* Carving, Modeling
  African Negro, 21, 116
  as aid in developing techniques, 21
  Assyrian, 90
  Aztec, 21
  Cretan, 116
  definition of, 83
  design for, 99-100
  and development of plastic expression, 84
  Egyptian, 116
  at elementary level, 89-91
  form through, 96
  form and mass through, 83, 116
  Mayan, 116
  realistic, 94
  relief, 100; *see also* Carving, relief
  in the round, 101; *see also* Carving, in the round
  at secondary level, 91, 93-96, pls. XXIX-XXX
  subject matter of, 89-90, 93-94, pls. XXVII, XXVIII
  teaching design for, 90
  wood-carving, 103-10
Seams in fresco buono, 77, fig. 27
Seasonal events as a source of inspiration, 12
Secondary age level; *see also* Adolescence
  junior high school
    design from, pls. LXXXIV, LXXXVI
    development of child as painter at, 32
    drawings from, pls. IX, X, XV
    furniture design from, pl. LXXXVIII
    interior decoration from, pl. LXXXVIII
    painting from, pls. III, XVI
    and pottery, 119-20, 133
    sculpture from, pls. XXIX-XXXI
    wood carving from, pl. XXVII
  senior high school
    carvings from, pl. XXVI
    characteristics of art work at, 18-19
    creative development in , 24
    designs from, pls. LXXXIV, LXXXV, LXXXVI, LXXXVIII-XC
    development of child as painter in, 33
    drawing from, pls. XI, LXVI
    preparation of glazes in, 141
    and graphic arts, 152
    and lithography, 171
    murals from, pls. XXI-XXIII
    paintings from, pls. V, VI, XVII, XVIII
Secondary age level, senior high school (*Continued*)
    and pottery, 120-21, 130, 133, pl. XLIX
    and sculpture, 91, 93-94
    subject matter in, 43, 93-94
    teaching techniques in, 33
Seeing, analysis of art of, 9
Self and home as sources of inspiration, 9
Self-evaluation
  through etching, 155
  through graphic arts, 152
  through modeling, 86
Semi-mat glazes, 143
Senior high school level; *see* Secondary age level, senior high school
Sensitivity to color, 44
Sex differences, 24
Sgraffito, 149
Shaw, Ruth Faison, 233
Sharpening wood-carving tools, 104-5
Shellac coat, 68
Significant details, 11
Significant use of line, 154, pl. LVI
Simplification, 4
Siqueiros, David, 68, 69
Sizing of water paints, 68
Sketches
  black and white, for mural, 70
  preliminary, importance of, in fresco buono, 77
  scale, for mural, 70
Sketching trip, equipment for, 5
Skills, 151; *see also* Techniques
  overempahsis of, 215
Slaked lime, 71-72
Slip, 129, 131
Slip decoration, 149
Slip stone, Arkansas round edge, 104
Slow motion camera, 21
Small scale, 32
Snake slip, 180
Social consciousness, propaganda disguised as, 57
Social problems as subject matter, 43
Social values
  of group murals, 52
  of mural painting, 51-52
Soft ground, formula for, 161
Soft ground etching, 160-61, figs. 123-25
Source materials for developing techniques, 20
Sources of materials, 207, 208

Special materials, 207
Specialization, tendency to, 24
Spontaneity, encouragement of, by painting, 27
Spontaneous creating in materials, 193
Spraying glaze, 145, fig. 104
Stabiles, pl. LXX, figs. 156-63
Stacking kiln
  for biscuit fire, 139
  for glaze fire, 145
Standards, professional, misuse of, 15
Stevenson, Robert Louis, 5, 14
Sticking method of pottery construction, 132-33
Stone
  Kelheim, 176
  lithographic, 176
Stone carving, 111-15
Stoneware, 142
Stopping-out varnish 165
  homemade 158
Stories as a source of inspiration, 14
Story elements, 1
Stretching canvas for mural, 67
Strip method of pottery construction, 130-31
Stylized work, 22
Subject matter
  character studies as, 43
  community as, 43
  diverse, 32
  home as, 43
  intimate, 11
  for modeling, 84-86
  for murals, 53
  other studies as, 32
  for painting, 28, 36-37
  personal interpretation of, 11
  portraits as, 43
  for sculpture, 89-90, 93-94, pls. XXVII, XXVIII
  at secondary level, 43
  social problems as, 43
Subordination of related parts, 41
Substitute vise
  for carving in the round, 110, fig. 48
  for relief carving, 107
Surface patterns, 213
Suspended mobile, 198
Symbolism, 3, 22, 29, pls. XII, XIII
Symmetry, dynamic, 40

Tactile and visual experience, 206
Tactile quality, 204
Tactile scale of materials, 203
Talented children, 2
Teacher
  demonstration by, 16
  guidance by, 16-17
  influence of, on pupil, 24-25
  as partner in art work, 62
  and stimulation of creative impulse, 96
Teacher-child relationship, 16
Teaching
  of color theory, 46
  of design, 33, 215-16
    in modeling, 84
    in pottery, 124-25
    in sculpture, 90
  of form
    in line and value through lithography, 170
    without line through mezzotint, 167
  group, 19
    of mural painting, 52
    of painting, 34
  individual, 18-19
  of individual painting, 34
  individual color, 45
  of line, through drypoint, 162-63
  Mexican method of, in drawing, 35
  of new concept of design, 230-32
  poor, 61, 213-14
  of pottery construction, 126
  tactics in, up to six years, 29
  of techniques, 17-22, 33
  of value through aquatint, 163
Teaching methods
  common, and pottery design, 122-23
  and design inhibition, 213
  poor, 15
Techniques, 23, 213
  first interest in, 17-18
  graphic arts as means of teaching, 151
  interest of adolescents in, 151
  life model as source for developing, 20
  as means of expression, 20
  natural objects as source for developing, 20
  overemphasis of, 215
  reason for learning, 20
  source material for developing, 20-22
  teaching of, 17-22, 33
Tempera
  casein, formula for, 239
  egg, formula for, 239-40
  as medium for ages nine and ten, 31
Tempera colors, 67
Templet, 123-24, 130, 131, fig. 77
Tennessee marble, 114
Test kiln, loading, pl. L
Test of art experience, 209
Testing
  of drypoint line, 162
  of etched line, 159

Textone, 81
Textile designs, pl. LXXXIV
Texture, 31
  experiments in, 189-90
  expressed with lithographic sticks, 174
Textured materials, rubbings of, 192
Things to do, 4
Three-dimensional media, 195
Three-dimensional posters, 203
Three-dimensional quality, 192, 193
Thrown pottery, 133-38, pls. XLVII, XLVIII, figs. 94-100
Tooling the foot in thrown pottery, 138, fig. 100
Tools
  for applying plaster in fresco buono, 72, fig. 20
  mastery of, 24
  sharpening, for wood carving, 104
  for stone carving, 111-13, pl. XXXIX
  to suit age level, 235
  for wood carving, 103-5, pl. XXXV
Tooth chisels for stone carving, 111
Tracing design in fresco buono, 72, fig. 36
Tracing drawing for lithograph on stone, 177
Training to see, 9
Transfer
  of design in fresco buono, 72, fig. 36
  of drawing in lithography, 175
Transparent method of fresco buono, 76
Transparent water color
  formula for, 237
  for young children, 29
Treasure Island, 14
Tusche, 176, 178
Twice-fired ware, 142
Two-studio method of teaching drawing, 35
Tyler School of Fine Arts, 236

Unbleached muslin, preparation of, 67
Underglaze color medium, formula for, 148
Underglaze colored slip, formula for, 148
Underglaze painting, 148
Underpainting, fresco buono, in black and gray, 75
Unity of the whole, 41
University of San Hidalgo, 69
Unseen world as source of inspiration, pls. VII, VIII

Value
  black and white, in painting, 48
Value (*Continued*)
  in composition, 32, pl. XVI
  dark and light, 31
  form through, 33, pl. XVII
  light to dark, in painting fresco buono, 75-76, figs. 24-26
  teaching, through aquatint, 163
Value scales, 163
Values
  of carving, 95
  educational, in graphic arts, 153
  of modeling, 95
  of collective mural, 62
  of murals done individually, 55
Variety in composition, 41
Varnish; *see* Stopping-out varnish
Velasquez, 38
Vermont marble, 111, 114
Vertical line compositions, figs. 1-4
Vise, 105
  for carving in the round, 109
    substitute for, 110
  for relief carving, substitute for, 110
Visual memory, training, 8
Visualizing form through models, 226-27, figs. 184-89
Volume and contour in design, 190
Volume and space, 200
Vorlehre, 204

Wall painting, Egyptian, 64
Wash effects in lithography, 178
Washington Memorial Arch, 7
Washington Square, 7
  in mural, pl. XXIV
Waste items, 195
Water color, 28-29, 31
  formula for, 237
Water paints, 68
Wax
  for finishing wood, 108
  for modeling, 87
Weaving, Mexican, 217
Wedging clay, 128, 136, pl. XLII, figs. 65-67, 93
Welfare Island, 7
Wheel, potter's, 133
White line for opaque fresco, 76
Whitehead Brothers, 72
Whiting, 162
Window display, pl. LXXIX
Wiping etched plate, 159, pls. LIX, LX, figs. 119-20

Women's Achievements as mural theme, 54

Wood
  burnishing, 108
  carving in, 103-7, pls. XXVII, XXXV, XXXVII, XXXVIII
  for carving, 105
  wax for finishing, 108

Wood carver's mallet and rasp, 104

Woodblock printing, 153

Works of Calder, 186

World, unseen, as source of inspiration, 13

Wright, Frank Lloyd, 38

Young child
  and development of plastic expression, 117
  and experimental nature of color, 44
  and line and mass in murals, 64

Younger children and collage, 189

Zinc plates
  in aquatint, 164
  in drypoint, 162
  in lithography, 176, 178
  in mezzotint, 167

Zorach, William, 99

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"Opposing movements give interest or even excitement. They appeal to our pleasure in a struggle. In our own muscles we relieve the strains and tensions of the contestants. In such a contest we want to see one side win, but only after facing a worthy opponent. So in any design a struggle resolved gives us satisfaction."

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You will find over 150 superb illustrations, including four pages of full color. Many of these are photographs of student work—photographs of the same creative experiments which you will undertake yourself; others show professional work, to demonstrate how the design truths which you will experience have been confirmed in actual practice—in pottery, textiles, rugs, paintings, the dance, houses and public buildings, primitive sculpture, posters, chairs, tables, lamps, and salon photographs.

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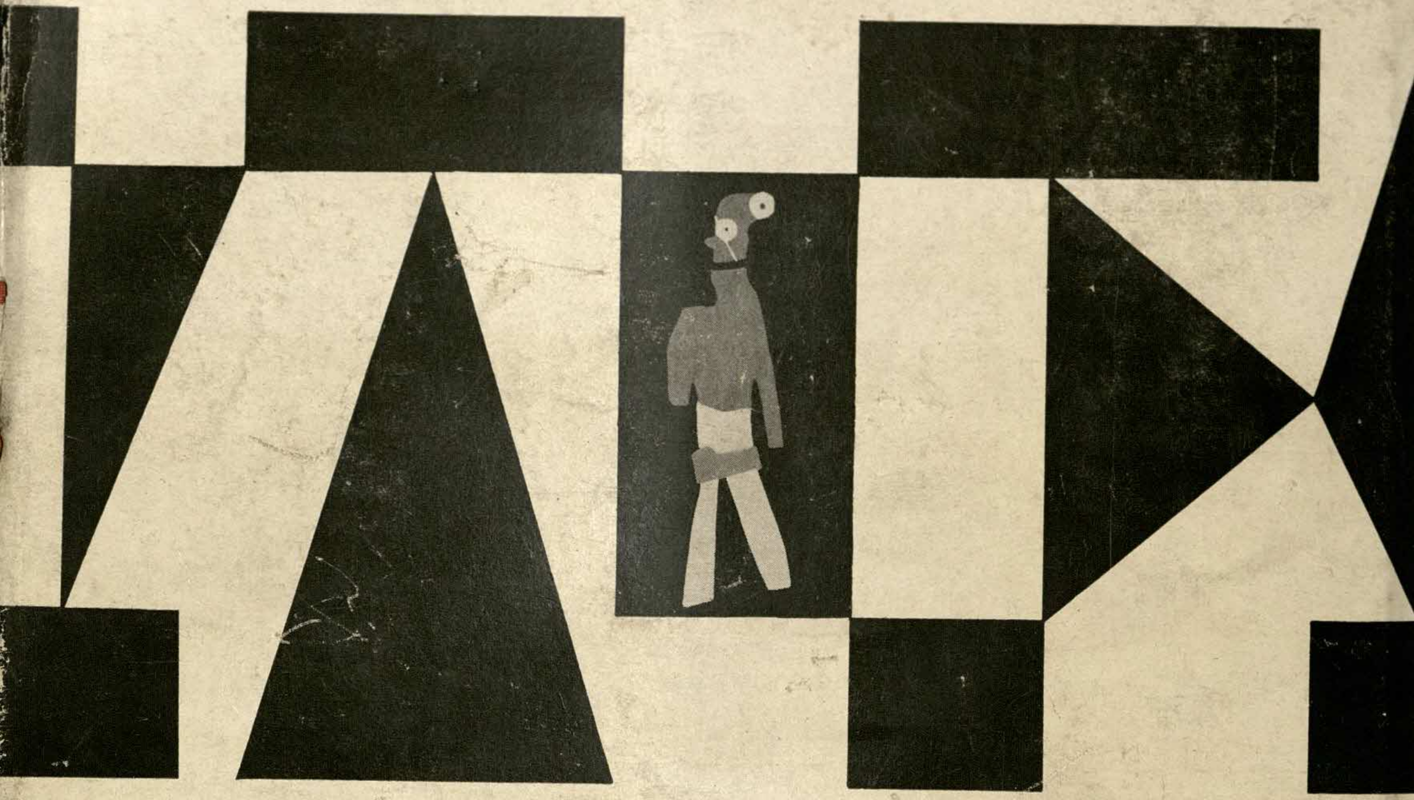

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